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AMERICAN MEDICINE AND THE NATIONAL HEALTH PROGRAM*

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I AM quite convinced that there are many in this audience who do not know what the National Health Program includes, but you have, of course, heard a great deal of the attitude of American medicine in relation to many of the new experiments in changing the nature of medical practice which are now being tried in the various parts of the United States, some with and some without the approval of the American Medical Association.

The reason for much of the opposition of the American Medical Association to many of these plans is frequently misrepresented, particularly in some of the periodicals devoted to little groups of serious thinkers, publications such as *The Nation, Forum, The New Republic, Daily Worker* and *Liberty*,—I might mention other publications,—but I propose to show you the exact ground on which medicine does oppose some of these experiments and proposes to encourage others.

In order to give you a proper background, I shall take you back quite a few years, not to 1883 when Bismarck first promulgated the compulsory insurance law making medicine the tool of the State, nor to England where Lloyd George, in 1912, in order to win an election, offered the people a compulsory insurance system and the dole. Neither shall I take you to the United States during the period of the World War, when Americans became imbued with the necessity of doing everything on a mass basis, without in many instances understanding the personal character of certain service that might thus be involved. I take you, instead, to the year 1932, when the Committee on the Costs of Medical Care tendered two reports on the state of medical practice in the United States. This committee proposed that all medicine in the United States be reorganized on a voluntary insurance basis, with all practice being conducted around the hospital,—each hospital having a group of physicians and specialists of various types, with the general practitioners in the community acting as feeders for the hospitals,—and that in each state, a central co-ordinating body be organized to control the practice in the individual states. That proposal met with a certain amount of affirmation from some of the social service leaders of the country, but most of the physicians dissented, as did the House of Delegates of the American Medical Association.

You should know, of course, that the House of Delegates of the American Medical Association is a purely democratic body,—probably more democratic than any other organization in this country,—since it derives its membership directly from the membership of the association in each of the individual States. In each county there is a medical society, and that medical society sends delegates to the governing body of the state society, which in turn sends its delegates, proportionate to the number of physicians holding membership, to the House of Delegates of the American Medical Association.

The House of Delegates of the American Medical Association is the only body in the organization which has the authority to establish policies for American medicine. Neither the president of the Association, the secretary, the manager, the editor nor the board of trustees has any right to make a policy for the American Medical Association. All policies derive from the House of Delegates.

There are, in the United States at the present time, 169,000 physicians licensed to practice medicine. Of this number approximately 145,000 are in the practice of medicine, and of the latter, 111,485 are members of the American Medical Association; this is the largest representation in any professional group in the United States or, in fact, anywhere in the world. Moreover, in the past year, we have added to the membership of the American Medical Association at the very time

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when it was under fire by a great many of the so-called radical publications. The additional 7000 members since June, 1937, constitute the greatest number added annually to our membership in the history of the organization. I mention that particularly because no doubt you have read, from time to time, of a "revolt" in the American Medical Association by a great number of physicians dissatisfied with the policies of the association; and yet at that very time, the addition to the membership was the largest in any single year in our history.

After the reports of the Committee on the Costs of Medical Care and the Commission on Medical Education in 1932, the entire subject seemed to fall, temporarily, in the state, as Grover Cleveland would have said, of innocuous desuetude. There, it lay for a while. Not much appeared in the newspapers about it because the Nation had other serious problems with which to concern itself. It had, in the first place, a national election, which gave the people considerable concern. After the election, there was the great question of recovery. And the most important question that we must still be concerned with is the question of recovery. I should say here and now, as I said at the National Health Conference in Washington, that the problem of medicine must always be a secondary problem, so long as there are 11,000,000 unemployed in the nation. I said, also, that in 1929, 1928 and 1927, we heard little about the inadequacy of medical service and about the lack of medical care. When the vast majority of the people of the country who are capable of working are given work to do with adequate wages for that work, — not the dole that is thrown out for work that is manufactured, — they are in a democratic country, and capable of choosing for themselves how they will live, what they will read, how they will entertain themselves, and who will take care of them in times of sickness.

After the election in 1932 we began hearing about social security, and about great numbers of people who ought to be provided for. We began talking about the Townsend Plan and the care of the aged.

It is interesting that scientific medicine has made many of these problems for the people of the United States. You did not hear about the care of the aged in 1890. In that year, 2.7 per cent of the people of the United States were over sixty-five years of age. Today 7.8 per cent are over sixty-five. Today, there are more people over fifty-five years of age than there are under ten years of age; yet, unfortunately, 95 per cent of the people who are over sixty-five are economically dependent. That, of course, is not the fault of the medical profession; that is, obviously, a fault of the economic system. It is interesting, however, that medicine, through prolonging human life and moving it up from a life expectancy of forty years to one of sixty-two years is primarily responsible for giving us the problem of the care of the aged.

In 1900, the average American worker lost twenty-eight days a year from his work because of illness. Today, the average American worker loses but eight days a year. Take 40,000,000 workers and give each worker twenty additional days of work which he would have had to lose and you have 800,000,000 days of work which would have required additional workers. Exactly as the machine age has added to the problem of unemployment, so has improved medical care for the vast majority of American workers added to it.

When we began talking about the Social Security Law, which was passed in 1934 and 1935, we were concerned, primarily, with the care of the aged, with the relief of unemployment and with the problem of medical care. At that time, a conference was called in Washington, with various committees set up to study various aspects of the problem. The President of the United States appointed the Technical Committee on Medical Care to advise him on the question of how medicine should be dealt with, under the Social Security Law. Edgar Sydenstricker who had worked with the Milbank Fund and with the Committee on the Costs of Medical Care, was chairman of this technical committee, and he advised the President that the problem could be solved by a compulsory sickness insurance plan for the entire nation. However, the President of the United States was apparently not satisfied with that answer to the problem.

A special session of the House of Delegates of the American Medical Association held that year stated it would be opposed to compulsory sickness insurance. The President of the United States then chose from a list of forty-eight names, which were presented to him, twelve men whom he constituted as a special committee. This distinguished committee, led by Dr. Harvey Cushing and including the president of the American Medical Association and ten other distinguished physicians, recommended to the President that there be no compulsory sickness insurance in the Social Security Law. It was not in the Social Security Law. Instead, Congress voted $10,000,000 a year, to be spent by the United States Public Health Service, in grants made to individual states which would apply equal sums from the state treasuries for the expansion of medicine. This money was

to be for infant and maternal welfare, for the improvement of dentistry, for the care of those with heart disease, the crippled, the blind and the hard of hearing, and for the control of venereal diseases and cancer.

Dr. Thomas Parran brought the venereal diseases prominently into the limelight. As a result, there was introduced in the last Congress of the United States the La Follette – Bulwinkle Bill. This bill gives, I believe, $3,000,000 this year, $5,000,000 next year, $7,000,000 the following year, and up to $25,000,000 a year thereafter for the expansion of our control of venereal diseases with provisions for Wassermann examinations and for arsphenamine and other valuable drugs to be given to those who are unable to pay, and in general gives this nation a campaign somewhat comparable to what is being done in England. In addition, because one of the important senators died of cancer, the senators pledged themselves to pass a bill for the improvement of our knowledge of cancer to the tune of $750,000 a year for five years, to be devoted to a building for the study of cancer and the dissemination of funds to various universities throughout the country making a study of the disease.

We have not lagged far behind in our attention to the specific problems of the Nation. But then, if there is any other proof that you need of this fact, I should like to point out that when, presumably, one third of the nation is undernourished and poorly housed and without medical and dental care, the Surgeon-General of the United States made public a report that the sickness and death rates of the United States were the lowest in our history, and that they were much lower than the comparable rates of England, France, Germany or any of the other great nations of the world. If we have a problem, it is not an emergency problem of the type indicated by the articles that have prevailed in our press.

At the same time, the problem of medical care is intimately tied with every other problem of the Nation. Medicine is intimately tied with poverty, bad housing and bad social conditions. The correction of bad housing, poverty and bad social conditions frequently brings about a definite improvement in the health of a great majority of the people in any population.

Bear in mind, also, that medicine is tied intimately with our government in many different aspects. From time to time, various federal committees have considered the problem of a reorganization of the government, in order to bring the questions of medical care under one head. For example, the United States government spends today $125,000,000 a year on various medical activities. This includes the medical departments of the United States Army and Navy, the United States Public Health Service, which is under the Treasury Department, and the care of the veterans, which is in a special department; it includes, also, the care of the insane to some extent, the education of Negroes in matters of health, the Bureau of Mines, the Food and Drug Administration, the Department of Entomology, which is a subdivision of the Department of Agriculture, and studies on nutrition, which are conducted by the Department of Agriculture. It includes one department whose location is apropos, namely that of maternal welfare in the Department of Labor! In addition there is the whole question of health education and health advertising over the radio, which comes before the Federal Communications Commission. There is also the question of truth in medical advertising, which is governed by the rules of the Federal Trade Commission. All these are related to the health of the American people; they are divided into a great number of departments. And there is the Veterans' Administration.

As the result of recommendations by various committees, half a dozen separate bills were introduced to provide for reorganization. The last congress turned down all of them. One of those bills included the creation of a new department, which was to be known as the Department on Social Welfare and Public Works. From time to time, the name of that was changed, so that it became known, eventually, as the Department of Public Welfare. It was to include three divisions: education; relief, welfare or charity; and medicine and the health of the American people. Promptly, education, as represented by all the leading educators of the country, and particularly by the Catholic educators, objected to having education taken out of the Department of the Interior and put under a department that is concerned with charity and relief.

Medicine also put up quite an objection, but not with success. Medicine was supposed to be left under a welfare worker, who was to be a cabinet member; it is no secret now that Mr. Harry Hopkins, who is in charge of the WPA and a considerable number of other welfare activities of the government, was to have been the man to head this department. I mention this particularly for two reasons: it is well known that Mr. Hopkins is close to the President and also that he has been present at most of the sessions of the cabinet in recent years, notwithstanding that he is not one of its members. He is now Secretary of Commerce. Mr. Hopkins has stated repeatedly in writ-

ing that compulsory sickness insurance is the answer to the medical problem of the country. When a committee of physicians, including 430 doctors, recommended that the American Medical Association discontinue all its opposition to the idea that the states go into the practice of medicine, he said: "I hail these distinguished physicians who have indicated that they believe — in contrast to the standpat leaders of the American Medical Association — that the state should control the practice of medicine!"

Then we pass to the next period in which there appeared on the scene the American Foundation studies. Just before they were published we began hearing of the Interdepartmental Committee to Co-ordinate Health and Welfare Activities. This committee was headed by Miss Josephine Roche, who resigned as third assistant secretary of the treasury to take over this new position. This body recently sponsored the National Health Conference, out of which came the National Health Program.

When we read about the Interdepartmental Committee to Co-ordinate Health and Welfare Activities, we thought that it was a committee which was going to have in charge the question of getting together all the different medical activities of the United States government under one head; that perhaps they really intended to have a cabinet officer concerned with the health of the people of the United States, a physician in the cabinet, who would know something about the prevention, diagnosis and treatment of disease, and who would be able to consider this problem with other problems that affect the Government. Of course the care of the people's health, from a financial point of view, is just as important a matter for the Government as is the work covered by the departments of justice, commerce and labor and that of many other departments which have smaller budgets.

Not much attention was paid to the Committee to Co-ordinate Health and Welfare Activities; they went right ahead. Then came the American Foundation studies, conceived as a plan to send letters to 10,000 American physicians, asking their opinions about what was wrong with medical practice in the United States. Out of that effort came the Committee of Physicians, headed by Dr. John P. Peters of Yale University School of Medicine, which proposed certain principles and proposals for the reorganization of medicine. While some of their opinions and proposals were excellent, there was one of which I had considerable doubt. That was Proposal 8, which said that the ultimate direction of medical care should be in the hands of experts, but which did not define who or what the experts were.

When you get on the witness stand as an expert, you have to prove that you are an expert. But under this particular proposal, it was not stated who the experts were to be. The American Medical Association and the profession have long been of the opinion that the only safety for the American people lies in a proposal which says that the investigation, planning and ultimate direction of medical care must be in the hands of the medical profession. We have tried for many years to keep politics out of medicine, and we have done our utmost to keep medicine out of politics. Our chief battle today is to keep politics — Democratic or Republican, Socialist or Communist, or any other kind of politics — and politicians out of the practice of medicine. There is no safety for the people of this country in a system of medical care controlled and developed primarily as a political weapon. Yet that would seem to be definitely the trend into which many of these people are endeavoring to force us.

After the American Foundation made its report in two large volumes there began to be other discussions. A committee went for luncheon with Mrs. Roosevelt and had a meeting with the President. They endeavored to get physicians to sign petitions supporting their ideas.

Those views came before the House of Delegates of the American Medical Association meeting in 1937, and at that time, they were rejected. At the same time a message, signed by all the officers and the Board of Trustees of the American Medical Association, was sent to the President of the United States indicating the willingness of medicine, as represented by 110,000 physicians, to do its utmost to co-operate with the government in giving all the people of this country the best possible medical service that could be given to them. Nevertheless, there was no specific attempt by the President or any of his secretaries or committees to avail themselves of this offer from the American Medical Association.

Then, before the meeting of the American Medical Association in San Francisco in 1938, we began hearing of a National Health Conference, to be called in Washington to consider the problem of providing the American people with suitable treatment of disease and with suitable preventive medicine.

Shortly thereafter, eight of the officials of the American Medical Association received from Miss Josephine Roche, chairman of the Interdepartmental Committee to Co-ordinate Health and Welfare Activities, an invitation to the National Health

Conference. We responded by inviting her to come to the meeting of the American Medical Association in San Francisco. She was unable to come, but asked Dr. Warren Draper, of the United States Public Health Service, to present her views to the House of Delegates. He gave those views. The House of Delegates heard them with the greatest of interest and then authorized the eight representatives of the American Medical Association who had been invited to attend the National Health Conference in Washington, in July, and instructed these delegates, of whom I was one, to support the policies established by the House of Delegates of the American Medical Association. I repeat this again and again to show you that these policies were not made or established or thought out by one person, but represented the collective view of 110,000 physicians, speaking through their delegates in a representative body.

So, we went to the National Health Conference, and we had the opportunity to learn, for the first time, about a new concept that is called the National Health Program. Apparently, after the President had appointed the Interdepartmental Committee to Co-ordinate Health and Welfare Activities, it set up a Technical Committee on Medical Care, an advisory committee which made a considerable number of studies and, to use the words of the governmental leaders, drew up a blue print to map the progress of medicine for the next ten years. I maintain that in times like these it is rather difficult to make a program for medicine for the next ten years. Most presidential administrations are for only eight years. Five or six years of the present administration have already gone. Yet, here we were to have a blue print to map the progress for the next ten years.

Miss Roche said, in her opening speech to the National Health Conference, apparently so instructed by the President: "Take this program to the representatives of the American people and to the professions most concerned, and present this program to them, so that we may have their reactions to it."

At the National Health Conference we found approximately 250 representatives of various activities of American life. There was one activity which was conspicuously absent. I mention this because Miss Roche gave a private dinner to representatives of the press on the first evening of the conference; I had the pleasure of attending that dinner and sat beside Miss Roche and near to Miss Katherine Lenroot. I said to Miss Roche: "I see absent from your conference one conspicuous group in the United States." "Which one?" she asked. I said: "This is still a capitalistic country, and I see no one representing capital in the United States. Where is the president of the American Telephone and Telegraph Company? Where are the representatives of the great textile industry? Where are the representatives of the great shoe manufacturing industry? Where are the representatives of the steel industry and of railroads and banks? Where are all these men? Were they not invited?" Her answer was: "Yes, they were, but they did not come. Some of them sent the industrial physician in the plant." Apparently, capital did not recognize the significance of this National Health Program.

There was one man there who was set forth as representing capital. I refer to Mr. Charles Taussig, president of the American Molasses Company. Mr. Taussig took it upon himself to speak for capital in the United States; he said he believed that capital would not be frightened by the immensity of this particular program, and would appreciate that it was the means of saving large sums of money for capital. Indeed, he said he would endorse it wholeheartedly.

All that first day, we heard speeches of various kinds. Some of them poked fun at the medical men. The doctors were accused as being bloated plutocrats, with trying to exploit the people. Dr. Hugh Cabot said thousands of young doctors all over the United States were sitting idle in their offices with nothing to do, and asked why somebody did not put the young doctors to work. Of course one of the reasons is that people learn by experience, and sometimes a little experience helps a doctor; older doctors know a little more than the younger ones. Not always, of course!

Then the next day at the conference we began to hear the National Health Program. The National Health Program proposed, for the first time to any group in the United States, an expenditure of $850,000,000 a year. It was said that they did not expect to get it all the first year, but they were working toward it.

That sum of money was to be used, first of all, for expanding preventive medicine in the United States. Now, I yield to no one, in my wish to expand preventive medicine in the United States, wherever the need can be shown. I believe we cannot have too much preventive medicine, based on sound, scientific knowledge. But, I am also a believer in telling the people the truth about preventive medicine, as about everything else concerned with science. There are many diseases that we could not prevent next year if you gave us $850,000,000,000 instead of the $850,000,000 I have just mentioned. We could not, with our present knowledge, prevent a single case of infantile paralysis because we have no exact knowledge

of how the disease is spread from one person to another, and of how the disease shows its earliest symptoms. Of course, we have the suggested symptoms of an increased number of cells in the spinal fluid and of fever conditions resembling a common cold, but by the time we recognize even these symptoms, the disease has spread. A mild case frequently appears in a community in which there has not been a recognized case for a year. So I say that even if we had $850,000,000,000, we could not guarantee to prevent one case of infantile paralysis. Prevention rests on scientific knowledge, and scientific knowledge should precede the expenditure of vast sums of money on all sorts of diseases whose etiology is not established.

It was proposed, also, that there be complete medical care for the indigent, and for a new group to be known as the "medically indigent." There have been all sorts of arguments about the latter term. We all know that one hundred dollars a month to spend in New York City is barely enough to live on and have anything resembling decent living conditions. I should say at once that such a man is medically indigent. It is impossible for him to save up for an appendicitis operation, a gall-bladder operation, a broken leg or a baby. But these emergencies can happen in any family. A man with one hundred dollars a month to live on in New York City is not prepared for such an emergency. He could be rated as one of the "medically indigent." However, he does not represent a vast majority of the people of the United States. A man living on a farm in southern Georgia and earning a hundred dollars a month, would be what his neighbors call a "big shot." He would be a real citizen in that community, and all the Negroes would tip their hats to him. There can be no single classification of medical indigency in the United States, on the basis of income.

In order to give complete care to the indigent, it is proposed to build 500 additional hospitals in the United States, using governmental money for the purpose; it is also proposed to maintain these hospitals for three years with governmental money, until the communities in which the hospitals are built are capable of taking over these hospitals.

It is claimed that there are approximately 1300 counties in the United States without a good general hospital. However, in contrast the American College of Surgeons, the American Hospital Association and the American Medical Association claim there are only 13 counties in the United States that are more than thirty miles removed from an accepted, general hospital. Furthermore, in 8 of these counties, there is a population of only five people or less per square mile. Naturally they cannot support a hospital; they could not even keep the beds filled with sick people. Where there are not enough people to support a hospital, even if it were fifty miles away from a good general hospital, you probably would not want to build one.

We have in the United States some 6800 hospitals, and approximately 6218 are registered by the American Medical Association. Seven hundred and twenty-nine of these are acceptable as educational institutions for the training of interns. These hospitals have been, for the past five or six years, from 25 to 35 per cent unoccupied. Why build 500 new hospitals, when a quarter to a third of the available space in existing hospitals is at this moment unoccupied?

Obviously, there might be another answer. This unoccupied space might be used for indigent and medically indigent people, with federal funds and state and county funds available for that purpose. This is another point of view that ought to be considered.

Then, again, when the government builds hospitals, it does not build them the way private industry does. As all of you know, most of the sickness today is cared for in non-profit hospitals. These hospitals were built, in most instances, by communities to provide for their needs or by church organizations, such as the various Catholic orders, Protestant groups, and the Jewish Orthodox and Reform groups. The church organizations have always been active in the building of hospitals, since the care of the sick is a fundamental motive in every great religion.

What will become of these hospitals when the Government starts taking over hospitals, subsidizing some institutions instead of others? Incidentally, they are already deciding which hospital in each community will be given federal money. But why should the government throw its favor to one hospital or another hospital, in relation to the needs of the community?

The Government proposes, when it builds, to spend a lot of money. I am going to mention two of its hospital ventures. In Hot Springs, New Mexico, is a hospital, built at a cost of $2,500,000, with 90 beds for the care of the crippled children of New Mexico. This particular hospital is named after the mother of the Governor of New Mexico. It is a magnificent hospital, as you may well imagine. When I visited there, it was occupied mostly by Mexican children who had been shipped long distances to Hot Springs, a town of 300 people. Only 30 of the hospital occupants were children from New Mexico. There is no orthopedic surgeon in New Mexico capable of doing the surgery; they rent one from Texas. He goes over, driving one hundred and sixty-five miles, to do the neces-

sary surgery on the children in this Carrie Tingley Hospital in New Mexico. For that, he receives a salary of $7200, which is $2200 more than is paid to the Governor of New Mexico for running the State. Today this hospital is already a white elephant on the State of New Mexico.

At Fort Worth, Texas, was built a hospital with 300 beds, at a cost of $4,000,000, for narcotic addicts. You can build a good hospital for four to five thousand dollars a bed! I have heard that the committee which came to look for a site around Fort Worth, examined fourteen and finally found one with a hill — the only hill within 200 miles. The first step was to remove the hill! It only snows once in every four or five years there, but they built a complete system of underground passages in order to lead the people from building to building, thus avoiding exposure.

The next step proposed is to establish 500 diagnostic institutes in the United States. These diagnostic institutes are to have complete x-ray equipment, basal metabolism equipment, electrocardiograph equipment, equipment for clinical pathology and everything necessary in order to aid the general practitioners to make diagnoses and to have the free services of the Government to aid them in cases of patients who are unable to pay. The House of Delegates pointed out that there are, in the United States, 6200 registered hospitals and that approximately 5500 of them have good clinicopathological departments and excellent x-ray departments. The question arises, Why not use the services of these hospitals to the utmost, rather than attempt to build 500 new diagnostic institutes? Furthermore, if they are built, where are they going to get the pathologists, the roentgenologists and the other specialists who are capable of acting as consultants to our well-qualified practitioners?

Another part of this program was presented on the third day of the conference by Mr. Isador Falk, a member of the Technical Committee on Medical Care. He brought in a proposal, which was that we should add to the entire pay roll of the United States a 4 per cent tax on our entire income. This tax would raise approximately $2,800,000,000 annually, and this amount would be used to set up in the United States a complete system of compulsory health insurance to cover every citizen in the United States, rich or poor.

Such a proposition has been unheard of in this country; even Mr. Falk was a little doubtful about it, because he said he did not propose to do the whole job at once. First, he wanted to get some of the money in, and then subsidize one state which would consent to be a guinea pig for this experiment and permit the people of that state to try it out. If it worked there, then they could try another state or two, and then it could be spread all around.

Professor E. Witte, of the University of Wisconsin, said that Wisconsin would be the guinea pig and that he would go home and present the proposition to his state. Well, unfortunately for him, they had an election in Wisconsin. Perhaps the proposition will not go over so quickly as he thought it would.

Mr. William Green, of the American Federation of Labor, and Mr. Charles Padway, general counsel of the American Federation of Labor said that they thought the workers ought to have cheap medical care, and they would not object to a tax on the pay roll for that purpose.

Right through the conference, the C.I.O. held caucuses. Mr. John I. Lewis sat in the hall, and once in a while Mr. Lee Pressman came in. The latter said the C.I.O. wanted free medical care for their members, but it would not tolerate one cent more from the workers' wages; of course, if it came out of industry or capital it would be all right. When that gets down to Congress, there may be some discussion! In any event, it became apparent at once that there would have to be much discussion of the National Health Program before a decision is reached.

Those who represented the American Medical Association stood up and said that we had no authority to commit the American Medical Association to anything, that we should have to take this back to our House of Delegates and that they would be asked to make the decision. The House of Delegates approved the legitimate expansion of preventive medicine, wherever the need could be shown locally and the administration could be maintained locally. They disapproved of the 500 hospitals and 500 diagnostic institutions, unless the need could be shown. They favored the utilization of existing institutions before expenditures were made for new institutions. They approved, instead of a compulsory sickness insurance plan for the entire nation under federal or state control, non-profit, voluntary, cash-indemnity insurance plans developed in the individual states or counties. Bear in mind that when you get old and are insured under the government, it does not buy for you food, shelter and clothing, but gives you back the money it took from you because you did not know enough to keep it for yourself. When you are unemployed, it does not buy food, shelter and clothing, but again gives you back the money it took from you. It is always the worker's money. It is deducted from his wages. When the em-

ployers pay their share of the social-security tax, they must add it onto the price of their goods, in order to show a reasonable return on their investment; so when the worker buys the goods, he pays that, too. So it all comes out of the worker.

When the government makes a contribution,—bear in mind that it may take a great deal from the rich, but also a great deal from the poor; money spent in taxes is not manufactured money out of the air, it is your money and my money—it is the people's money, the people must have the right to control their own money and expenditures, if we are to remain a democratic nation.

Our chief opposition to compulsory sickness insurance is not so much that it deteriorates the nation. It invariably does that; it has done that in every country in the world where it has been in existence, regardless of what people say. There is no country today which has as high a standard of medical service as prevails in the United States at this moment. Diphtheria control, infant mortality and even maternal care will compare favorably with most of the great nations of the world. Before we change this system, bear in mind that we object to compulsory sickness insurance not only because it degrades the quality of medical service, not only because it enslaves the medical profession of the country,—and it must enslave us,—but because primarily it is the first insidious approach to the breakdown of the democratic system of government. Give anybody the right to interfere thus intimately with the lives of the people, to pay for them the physician, whether or not the physician is selected by the patient, and you have the first step toward totalitarianism. Personally I hate and fear totalitarianism, whether it be under the name of Fascism or Communism. America is the greatest refuge for a free people existing in the world today.

It has been charged that the American Medical Association is a standpat organization, and that it has prevented the people from trying out new forms of medical service. In the United States there are some 300 group-practice clinics, most of them being operated by men who are members of the American Medical Association. There are 300 fraternal and sick-benefit organizations providing cheap medical care for those who want it. There are 2000 industrial medical-service groups. There are 300 universities which give complete medical care, including diagnostic service and treatment to all their students for sums like $10 or $12 a year per student. All of these are operated by members of the American Medical Association.

There are hundreds and hundreds of voluntary insurance plans set up in which the patient receives, in time of his illness, not the services of the doctor, but the cash he put in; in this way he can get the hospital service and the doctor he needs. I maintain that this is not a standpat medical organization. These services were voluntarily developed under the American plan, which keeps the individual as the determiner of his own life.

The American Medical Association has not approved many of the so-called group medical plans because they have not met the standards of the American Medical Association as to their ethical conduct. I maintain that when any group of physicians form themselves into a corporation and send out solicitors from door to door and desk to desk to solicit patients to leave their own doctors, the effort can only lower the quality of medical service in the country. In some of these groups the individual is led to believe that for a certain sum of money he is going to get a complete medical service. But there are extras. They say they will give a blood count, but if you want a sedimentation test or a complement-fixation test,—because you really should have it,—they will give it to you for a little extra. You are only entitled to two chest plates, so if you want serial pictures of the gastrointestinal tract, they will give them to you, but it will cost you extra. They tell you they have used up all the funds available, and charge you extra; after that, it is the corporation that is collecting the funds and not the people. In many of these clinics, it is the hope to make money from the accessories, such as needless supports, needless corsets and all sorts of needless drugs that may be ordered. That is the fault of every one of these systems, the overexploitation of the patients.

When the Group Health Association was established in Washington, it was opposed first of all, because $40,000 of federal money was used to develop a private corporation. Why should government employees be subsidized by the American government; they ought to pay for medical care out of their wages, exactly the same as anybody else does. Furthermore, when this charge came up in Congress, the committee asked the lawyer for this group whether there were going to be free barbershops and gymnasiums, because, of course, the employees would be better workers if they had these things.

It was pointed out that with the funds available the group could not give a satisfactory medical service. They proposed to charge $4.00 per month per family, for a complete medical service, including hospitalization. They have since raised the price, as you can read in the current issue of *Survey Graphic,* to $6.00 per month, they have

added a $5.00 initiation fee for every man who enters the service, and they have insisted on a complete physical examination of every human being joining the service, because in all these systems there are always patients with chronic ailments who tend to break them down. Enough patients with psoriasis or a mild diabetes, will break down any such system.

Finally, they have eliminated brain surgery and the care of those with tuberculosis and venereal diseases.

Is that a good medical service? We object on the ground that they are not supplying satisfactory medical service to people who think they are going to get it.

Pressure began to be put on the American Medical Association to consent to a great many of these experiments which did not seem to be scientific. This was done in many different ways, one of which was the attempt to indict the American Medical Association with a grand jury in Washington, in order to make the association sign a consent decree. They will not even tell what kind of a consent decree. They said: "You write it out and we shall tell you if it is all right." Those indicted did not write it! The House of Delegates, the only body with authority to speak, said to the Board of Trustees of the association, the body that has complete control of the direction and finances: "We wish you to oppose this as a blow against scientific medicine, as a blow against the standards of scientific medicine, which have been set up for the benefit of the people, as a blow against the democratic system of government."

The House of Delegates authorized the Board of Trustees to spend every cent possessed by the American Medical Association to carry this even to the courts of last resort, because they conceive this maintenance of a free medical profession as fundamental to the life of the American people and of the American democracy.

At present a conference committee of the House of Delegates of the American Medical Association is meeting with the Interdepartmental Committee to Co-ordinate Health and Welfare Activities; thus far, nothing definite has been concluded. They may yet get together on some of these points of serious disagreement, such as the 500 hospitals, the 500 diagnostic institutions in rural areas and the method of control over the indigent and medically indigent.

If the federal government is to vote vast funds for the medical care of the indigent, the question next arises as to who should have that responsibility.

At present, there are health officers in the individual states and some of the larger individual counties who believe that all this federal money should be turned over to their health departments and that to their departments should be assigned the diagnosis and treatment of disease among the indigent and medically indigent. It is proposed to introduce legislation in connection with this matter in the next Congress, as an amendment to Title 6 of the Social Security Act, to be put under the individual states and, presumably, from them, down to the county health departments.

This is a question which deserves the utmost care and consideration before the American people embark lightly on such a system. As all of you know, there is a great difference of quality and a great amount of inadequacy in many of our state health departments and in many of our county health departments. This is the result of politics being mixed up with these departments far beyond that existing in the welfare divisions and those of public construction. Before we enter upon this sort of thing, we want to know exactly what is to be done. We cannot approve of a nation-wide policy of this type, without a great deal of consideration being given to it.

It has been estimated that it will require eight separate and distinct pieces of legislation to make the National Health Program effective, according to the plans set forth. That means that every one of these pieces of legislation must come before the Congress. There have been times in the past when very little time was allowed for hearings. Sometimes, a bill would be brought up in the morning, heard at noontime and passed in the afternoon. If that is to be done with the National Health Program, the people will be committed to something the soundness of which they cannot determine.

Here again, not only the medical profession, but all the people of the country must be alert to what is being done, in order to determine whether or not it is for the good of the American people.

Lastly, I recommend to all of you that you read in the current issue of the *Saturday Evening Post* the article "Rehearsal for State Medicine" by Samuel Lubell and Walter Everett. This article describes the manner in which the Farm Security Administration has been spreading throughout the United States, and now has already established in twenty different states a system of medical practice, largely under state control. The authors make the point that we need no longer argue whether or not we shall have state medicine, or how we shall have it, because in those twenty states, state medicine is here — by what authority, again nobody

knows — because in these states the Farm Security Administration loans money to farmers with which to pay medical bills.

However, when you begin hearing of the abuses that have developed in many states under that system, again you will feel that there should be a much more careful study of it and control of it before any state embarks lightly on such a procedure. I have no doubt but that it will give some satisfaction, but in many other places it has worked only to the degradation of the medical profession, to the deterioration of the quality of service and to the encouragement of chiseling of public funds, beyond anything anybody ever thought of in the past.

The American public must be aware of these things if they are to fulfill their rights of American citizenship. Being a citizen not only gives you rights and privileges, but it also gives you responsibilities. We have been far too prone in the past to neglect these responsibilities, leaving them to various leaders to look out for us. We must all take an interest in this matter, if we are to protect the rights of the physician, the rights of patients and the advancement of medical science in this country.

It was Abraham Lincoln, who said: "A people cannot exist, half-slave and half-free." I tell you no people can exist with a medical profession enslaved to make a politician's holiday.

MEDICINE AND THE PUBLIC*

JOHN P. PETERS

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IT HAS become a tradition in America that European experience in matters social, economic, and political has no significance for us. This appears to be part of a boastful, flag-waving attitude, well characterized by the slogan "100 per cent American." It is strangely at variance with the placid assumption — no, almost emphatic insistence — that our government and all its agencies are inherently riddled with corruption. Because of these national traits, the American public and the medical profession have remained uninformed or misinformed about European experiments in the dispensation of medical care and suspicious of attempts to initiate similar experiments in this country. There are large numbers in all walks of medical life who see the evils in our medical services and would welcome some reorganization; but how disordered are their views of the direction changes should take is evident from a perusal of "American Medicine," a compilation of their opinions, published by The American Foundation in 1937.

The general defects in the provisions of medical care here and abroad have been analyzed with the greatest care; the broad directions which remedial measures should take have been explored and tested by experiments. Some of the most significant reports of these investigations and experiments are those of the British Royal Commission on National Health Insurance in 1926, Political and Economic Planning on the British Health Services, the Committee on Scottish Health Services, the Committee on the Costs of Medical Care, our own National Health Survey, and that of the Technical Committee, which was presented at the recent National Health Conference.

Reiteration of the same problems and presentation of the same solutions in all these reports must bring conviction that there are certain defects inherent in the nature of modern medicine which transcend boundaries of time and place. Moreover, because medicine has its roots deeply planted in the natural sciences it offers objective data by which these analyses may be tested and from which surveys and projects may be oriented. This potential objectivity also gives hope that more rapid advances may be made in the provision of medical care than in the provision of other basic necessities, such as shelter, food, and clothing, the approaches to which have not been so clearly defined. At least there seems to be good reason for Dr. Hugh Cabot's impatience, expressed in a speech before the National Health Conference, to "get over this survey business and get on with the war."

Since the general aspects of the problem have been so thoroughly described by others, they will be merely sketched in broad lines as a background for a more particular discussion of the interests of the medical profession and of certain points which lend national coloring to the problem in the United States. It is recognized that solutions

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for these problems cannot be found by physicians alone, but only by the integrated efforts of physicians, other professional groups interested in social welfare, and the government. But physicians occupy a peculiar position as the experts who must implement and execute any plans that may be devised.

The National Health Survey estimated that in 1935-36, in the urban populations investigated, forty per cent of persons came from families with annual incomes less than $1,000, eighty per cent from families with less than $2,000. Somewhere in this scale a line can be drawn below which persons are quite unable to pay for medical care without sacrificing the bare necessities of life. The exact location of this line must vary with local conditions which influence the cost of living and with fluctuations in the real value of money. Probably at the time of the survey and for the population investigated, $1,000 would have been a fair approximation, since over half the population with incomes below this were forced to seek public relief sometime in the course of the year. That forty per cent of our people are too needy to pay for their own medical care is a deplorable and, it may be hoped, a transitory condition connected with the depression. But even in the comparatively prosperous year 1929, only twenty per cent of people came from families with incomes greater than $3,000 and an equal number belonged to families with less than $1,000. Although these proportions may vary, nothing short of a revolution will abolish gross inequalities of income and the presence of dire economic need. Any intelligent social welfare program predicated on evolutionary development must take this need for granted and can meet its fluctuations by measuring relief in proportion to income.

The methods by which medical care can be provided must be examined. Attention has already been called to the lowest class, which can afford to pay for no medical care. At the opposite end of the scale is another class whose members can pay individually for all the medical care they may require. Between these two extremes lies the great mass of the population, whose ability to meet costs of medical care varies from the barest minimum to total independence. Unless those in the lower brackets are to accept service of inferior quality they must receive some financial assistance. Even those higher in the scale may, at any time, be reduced by catastrophic illness or disability to the level of indigence. Illness is a hazard of such unpredictable incidence that it cannot be budgeted in advance like most of the prime necessities of life. It is more disastrous than other hazards because it imposes a double penalty. It deprives the wage earner, at least, of income just when it is most needed to meet the costs of medical care. It is to meet the needs of this great middle class that cost-sharing methods have been devised.

Before these methods are considered, however, a more fundamental question must be decided. Is it to the advantage of society to provide for the health needs of the whole population? From a purely humanitarian standpoint the answer would undoubtedly be affirmative, but humanitarianism sometimes has to yield to economics. Whether a comprehensive program against sickness and disability would yield returns commensurate with its costs is harder to answer. It has been estimated that losses through illness are three or more times as great as expenditures on medical care. Undoubtedly, if these expenditures and the care which they purchase were better organized, the losses could be greatly reduced. Dr. Louis I. Dublin, at the National Health Conference, stated: "Studies which have been thoroughly confirmed show that on the score of the nation's assets, human beings are valued in terms of their productive capacity at five times the value of all other assets." And in another passage: "Again and again health departments, insurance companies, private agencies, have proved to the hilt that there is no finer investment than an investment in the prevention of disease and the care of the sick." These predictions are not without factual support; but if they were merely statements of opinion, it is often opinion rather than fact that determines action. At the National Health Conference, there was unanimous admission of the existence in this country of a great unmet need for medical care and clamorous insistence by all organizations of consumers for some action to meet this need. That care must be provided to the truly indigent by the government is more and more generally accepted. Both the public and the medical profession recognize that physicians cannot supply all the service required gratuitously. Private philanthropic efforts are so dependent upon emotional appeals that they can probably never be effectively organized and directed to meet the demands of such a broad social problem. Governmental aid recommends itself also on the score of equity. Voluntary philanthropy puts a penalty on generosity. The physician can bear the burden only by mulcting his rich patients for the sake of the poor. Moreover, the demand for gratuitous services falls heaviest on those who can least afford to give them, practitioners in needy communities. But all these details become insignificant before the one fundamental fact that the truly needy can

receive medical care only by subsidies derived from the pockets of the wealthy, whether they come in the form of taxes or gifts.

If the decision is made to provide for the needy, certain inevitable consequences must be faced. Although poverty is not a sign of delinquency, no premium should be put upon it. Those just above the level of absolute need cannot with justice be treated worse than their poorer brethren. Yet this is inevitable if public aid is given only to the truly needy. Those just above the income boundary of indigence must be reduced to the ranks of public charges by illness or disability before they can receive help. To escape this dilemma many will delay or forego medical care not urgently necessary.

It is to enable persons in this middle class to secure medical care that various cost-sharing methods have been devised. Of these, health insurance deserves major consideration because it has been more widely tested than any other procedure and because in theory, at least, it is more exclusively directed to meeting the costs. This latter point cannot be too much emphasized. Insurance is only a method by which people combine to meet collectively a hazard which, for the individual, has a variable and unpredictable incidence. Because methods for the distribution and administration of medical care under health insurance have rather generally followed a conventional pattern, it has been too much assumed that this pattern is implicit in all health insurance systems. If this were the case, the imminence of health insurance under the growing pressure of public demands would be cause for serious anxiety. There can be little doubt, from the experience in Great Britain and other European countries, that the adoption of health insurance, conventionally patterned, would improve the health of the people at large and the economic status of the physician. The imposition of such a uniform system, however, especially if it gave momentary satisfaction, might ultimately delay progress by checking experimentation. Errors in the present health insurance systems have been discerned and should not be repeated in this country. Some of the chief errors arise, I think, from uniformity in the methods of administering medical care.

If insurance is to cover all those to whom it is applicable it must be compulsory; voluntary health insurance can never provide for the population as a whole. It will assure individuals in any income stratum better care than they could otherwise afford, but it does not abolish the income strata. Consequently, it continues with only slight modification the present order in which care is proportioned to wealth. If the system is to be supported entirely by the insured on the contributory principle, the same difficulty is encountered. Those in the lowest income brackets can buy only an inferior grade of medicine. The higher standards of care are set, the more limited becomes the class which insurance can cover and the larger grows the group which must receive public support. Employers' contributions are more adapted to provide disability benefits than to purchase medical care, because they can be levied only for the benefit of wage earners to the neglect of the unemployed and dependent members of the population. If a high quality of medical care is to be provided to the whole of the otherwise self-supporting middle class, the premiums of those in the lower income brackets must be supplemented by the government.

Evidently insurance must be scrutinized with some care. If improvement of the health of all the people is the goal, the rich will have to contribute through taxes to provide subsidies for the needy. If the problems of the intermediate class are to be solved by health insurance, premiums must be graduated according to income and must be supplemented by government contributions graduated in the reverse direction. If such a system is subjected to analysis, it at once becomes apparent that insurance is no more than a special form of taxation imposed upon a certain portion of the population. It may have certain advantages over a wholly tax-supported system; but these advantages have not the same weight under all conditions. The recommendations of a large minority of the Scottish Commission are worth quoting in this respect: "The insurance principle becomes continuously less appropriate as the field covered is widened. It has pre-eminent merits as a device for raising money for purposes that are sectional; but when the whole, or substantially the whole, of the population are potential beneficiaries, the retention of the insurance system means the retention of a considerable amount of machinery to achieve an end that might be compassed more simply."

A final element in the question concerns the components of medical care. It is this dimension of the problem with which physicians are chiefly concerned and in which their expert services are indispensable. Methods of financing medical care are primarily the responsibility of economists. The public-spirited and liberal members of the medical profession are solicitous only that sufficient resources be made available without detrimental restrictions. The American Medical Association has expressed itself rather unfelicitously in this connection. The ten official principles of the Association, intended to preserve freedom of action and initiative to its members, place major emphasis on the maintenance of financial com-

petition and the direct passage of fees from patient to physician. This unfortunate attitude will probably prove transitory. It is quite similar to that which the American Medical Association adopted at first towards workmen's compensation and which the British Medical Association initially took towards national health insurance. Both have found their anticipatory fears unwarranted and have learned that remuneration by the government or other intermediary agencies is quite as useful and more dependable than direct compensation from patients. Unhappily these temporary misapprehensions divert attention from the more important subject, the nature and quality of medical care.

The very minimum of medical services is the provision of public health measures. In the beginning, these included only measures to eliminate environmental factors conducive to ill health or physical disability and to prevent the dissemination of contagious diseases, together with the custodial care of the mentally deficient and insane. More recently the care of certain chronic diseases, notably tuberculosis, has been entrusted to the government. Public health departments in certain communities are now engaged in providing diagnostic and therapeutic facilities for physicians, in the rehabilitation of crippled children, in reducing the hazards of maternity and improving the medical care of infants, and in preventing or eliminating industrial hazards. Although the assumption of many of these functions by governmental agencies was contested by the medical profession, at the present time the need for their further expansion under the same auspices is quite generally accepted. Efforts should be made to bring public health services throughout the country up to the high standards which now obtain in only a small part of the nation, and to integrate them more closely with the medical services.

Without sickness or disability benefits as a provision against the economic distress that comes from illness, medical care for the needy or near needy becomes almost an empty gesture. This, private philanthropy has but ill provided and the medical profession cannot give. It is logical to believe that unemployment insurance will soon be stretched to cover it. There is no good reason why unemployment through illness or disability should be distinguished from unemployment incurred for other reasons. Sickness benefits, although they are necessary adjuncts to any comprehensive program for the conservation of health, are not directly medical, but economic measures. Their costs should not be confused with those for medical care, nor should the burden for their administration fall upon physicians. The latter will undoubtedly have to participate in the process of certifying disability; but their duties in this respect should be minimal lest they be diverted from the more important functions which they alone can serve.

Although the general practitioner is and must remain the fundamental unit in any medical system, the mere distribution of medical attention, exposure of patients to physicians, cannot be interpreted as the provision of adequate care. It is the greatest weakness of national health insurance systems that this has hitherto been almost their sole objective. Undoubtedly they have bettered the general health of the people somewhat by bringing more persons into contact with physicians. In this day, however, a practitioner with only stethoscope and prescription pad can offer but a small part of the benefits which medicine has to contribute. Like every pursuit which is founded on science, medicine has undergone a technological revolution. Today, the scientific practice of medicine demands knowledge, expert technical training, diagnostic and therapeutic facilities undreamed of ten years ago; the armamentarium which it will require in another ten years is beyond prediction. If the world is to reap the benefits of these scientific discoveries, they must be made available to the public.

It is hard to see how this can be efficiently accomplished without some departure from the present individualistic system of practice. No one man could acquire the knowledge and technical proficiency to practice all the skills of medicine, even if he had the money to possess and the time to manipulate all the apparatus. The general practitioner is to be congratulated if he can keep aware of new developments and recognize the indications for their use. Specialization, especially in the use of technical procedures, has become essential. However, specialties should not be practiced for their own sake; they are merely ancillary to the broader functions of medicine and must be co-ordinated by some method. Co-ordination is essential for another reason. The physical equipment required for the modern practice of medicine is so costly that it becomes ever more important that it be utilized with the greatest efficiency. The overhead expense incurred in the purchase, maintenance and operation of this apparatus, which makes up no small part of the cost of specialist services, becomes unduly large under an individualistic competitive system because of the reduplication of equipment that such a system entails. It is almost too obvious to mention that under even the most efficient system, with these accessories and with the greater educational preparation which is demand-

ed of physicians, doctors can no longer afford to give medical care gratuitously to the increasing proportion of the population that cannot afford to purchase it.

In spite of the apparently inevitable implications of medical evolution, efforts at co-ordination are still in the most elementary stage. Physicians trained in various specialties have formed private groups which can offer more comprehensive service than any individual in the group could give alone. The economies effected by such voluntary aggregations, even if its members are activated by the highest motives, under a competitive system with fees more or less standardized, accrue to the physicians rather than to the patients. The formation of groups or co-operative organizations which provide general care on a prepayment basis, although in theory it would seem a sound procedure, has met the bitterest opposition of organized medicine. The reasons advanced to explain this opposition seem to the initiated not altogether consistent nor convincing. It is claimed that it will destroy the professional status of the physician, as if medicine were still comparable to the law, a pursuit that can be conducted without special properties or technical aids. There are strong objections to the exploitation of physicians and patients for profit and to the control of groups by organizations or persons with interests foreign to those of the patient. Fear of such dangers and fear lest the element of personal responsibility be removed from the physician justify injunctions against the corporate practice of medicine. Advertising and soliciting patients are likely to have a degrading influence. Experiments have proved, however, that these dangers and nuisances can be avoided in co-operative enterprises instituted to furnish medical care to organized groups of the population, so long as no third party is permitted to profit from the undertaking. If insistence that each patient have the right to free choice of a physician expresses more than a desire to preserve unrestricted competition among physicians, no one can dispute the remark made by Dr. C. E. A. Winslow before the National Health Conference: "I have great sympathy with the principle of freedom of choice of physicians, but I should like to point out that any acceptable definition of freedom of choice of physicians must include the right of a group of patients to choose a group of physicians of their choice. Any artificial attempts to interfere with that freedom cannot stand." The following passage from the latest official resolution of the American Medical Association concerning hospital insurance is at best an inept manner of conveying the idea that the sacred personal relation between patient and physician must be preserved: "If for any reason it is found desirable or necessary to include special medical services such as anesthesia, radiology, pathology or medical services provided by out-patient departments, these services may be included only on the condition that specified cash payments be made by the hospitalization organization directly to the subscribers for the cost of the service." My respect for American physicians will not allow me to admit that their services will be influenced predominantly by the hands through which they receive their compensation. But the emphasis in their resolutions and in the statements of their official spokesmen has been unfortunately placed. Equally unfelicitous is the insinuation that if salaries are substituted for fees the quality of medical service will deteriorate. Such an insinuation is not even entirely ingenuous. For generations young men have served on salaries without objection as assistants to their professional elders. Specialists employ assistants on salary without criticism. Our public hospitals and universities present, among their salaried physicians, examples of unsurpassed industry and enthusiasm.

The great scientific achievements of America and the high standards of its medical schools are cited as reasons for eschewing change in the present methods of medical practice, as if the two were related. How much credit for the rapid advances in investigation and education should redound to the general organization of medicine is debatable; that the tempo of these advances would have been retarded, had there been less co-operative activity, cannot be questioned. Nor can there be any doubt that the association of specialists, often on salary, in our teaching hospitals has greatly accelerated the elucidation of clinical problems. The exemplary nature of the clinical work done in such institutions and by similar groups less intimately connected with universities — such as the Mayo Clinic — has won them international recognition. Is it not the height of paradox to obstruct wider dissemination of the group system when our medical schools are teaching and demonstrating its practical advantages?

Co-operative and group health systems are steadily increasing in numbers and strength. Their extension was recommended by the majority of the Committee on the Costs of Medical Care. They seem peculiarly adapted to meet the requirements of certain portions of the population and certain geographical areas. There is no reason to believe that the group principle could not function under an insurance system or one that was financed by taxation. A movement so obviously conducive to efficiency and economy will not be checked by mere obstructive tactics. It would ap-

pear to be better policy for the medical profession to anticipate inevitable trends. If they participate in experimentation they may influence its direction. If the standards of medical service and the personnel of co-operative ventures were not satisfactory — which has not been demonstrated — some blame would attach to the medical societies which have discouraged or prohibited their members from entering such ventures. If co-operatives encroach upon established practice, practitioners will not better their position by abstaining from participation. If they reduce some incomes, they may increase the general level of income and offer greater security. If, by promoting efficiency, they increase the capacity of physicians to care for patients, they also increase the capacity of patients to pay for these services and enlarge the demand for services. Individual choice of physician may be conserved so far as it is compatible with the best service. Finally, the union of a group of men in a common enterprise furthers education through mutual stimulation and criticism. The best patterns for such enterprises undoubtedly remain to be found; no single pattern is likely to prove suitable for all communities. But the general principle that a higher quality of medicine can be provided by a group of physicians with individually differentiated training and functions, working in co-ordination, than by individual physicians operating competitively, has sound theoretical and practical support.

Hospitals must be included in the medical services that are contemplated and must be made generally accessible. A recent spot map showing a hospital within thirty miles of every person outside of the uninhabitable portions of the Rockies is quite meaningless. It is clear from the report of the Technical Committee, eloquently confirmed by numerous speakers at the National Health Conference, that there are not sufficient hospitals accessible to the members of communities about them, equipped and staffed to provide care of high quality. Construction of further hospitals alone will not meet the need; those already in existence, both public and private, must be improved and made more available. The services of modern hospitals are not confined to their inmates. They provide, in addition, diagnostic and therapeutic facilities to their out-patients and for the patients of physicians in the communities in which they are located.

Finally, no program for the improvement of medical care can neglect education and investigation, the institutions which train the professional personnel and develop newer and more efficient methods to prevent and combat disease. Support for these institutions must be measured out with no niggardly hand to meet the demand for more and finer products. And the process of education must not stop at the exit from the school. Under a purely competitive economy, the obligation of the medical schools to meet the demand for "refresher" courses for practitioners out of their present meager means and by adding burdens to their already overtaxed faculties is questionable. If they are to satisfy this obligation under any system, further resources must be found. This burden will be partly removed by the formation of properly constituted groups and medical centers and adequate provision of hospitals. A modern hospital or clinic, properly staffed, equipped, and conducted, has all the potentialities of an educational institution. Moreover, the efficient organization of work should grant the workers more opportunity and incentive for self-improvement without impairing accomplishment. It is to be anticipated also that those gifted with curiosity and originality will devote some of this time to investigations that will further speed the advance of medicine.

Means must be found by which personnel and facilities may be selected on the basis of competence and quality; standards, not on stereotyped models, must be established; authoritative bodies, which can exercise judicial powers without fear of political pressure from within or without the medical profession, must be constituted. Although professional or trade organizations have been found inherently unfitted to assume such functions, the medical organization, if it would rid itself of a jealously defensive attitude, could do much to forward discovery of a proper formula.

At present federal, state, county, and city governments all share the load of public health services. No one of them can be eliminated. There is reason to believe that the part that all will play in the provision of medical care will increase. If this is so, the allocation of responsibility is a matter for intelligent consideration, not one that should be predetermined by political ballyhoo or unreasoning prejudice. It is feared that intrusion of government in medical affairs will necessarily bring bureaucracy, regimentation, corruption, and inefficiency. Federal intrusion is particularly feared because of its potential magnitude. Those who admit the necessity for federal financial aid prefer that administrative control be left to the states and counties. Although local autonomy seems to offer more chance for intelligent variation by constituting units of manageable proportions, our experience with social security gives little reason to believe that political inefficiency and corruption will be eliminated by entrusting administration

to local governments. If federal funds are to be spent, the federal government must reserve some right to condition the manner in which they are expended. All these anticipations would be robbed of some of their menace if those with expert knowledge, especially physicians, would enter wholeheartedly into the projection of plans, instead of confining themselves to objections.

Certain virtues our federal government has displayed: a great interest in social and economic problems and a capacity to probe them by investigation. There is not space to discuss in detail the National Health Survey, the Report of the Technical Committee, nor the comprehensive program for the improvement of medical care presented before the National Health Conference; but certain characteristics of this program must be stressed. Now that attention is no longer focused on the details that aroused personal and factional animosities at the Conference, it is seen that the program bears the marks of statesmanship, rising above political expediency. The problem is clearly defined and measures for the treatment of each major phase are outlined. The federal government is not given undue predominance; administration is entrusted to local and state authorities; proposals are stated in general terms only; the means to implement them and the machinery to execute them are wisely consigned to further discussion and experiment; gradual, evolutionary development is contemplated. Provision of some kind is made for each of the components of medical care, with proposals for financing them in accordance with the economic status of the population. Undoubtedly, objections can be raised to details of the plan; but it provides a basis for discussion hitherto unequaled. Consumer groups have almost unanimously accepted its chief provisions, hailing especially those that deal with means of providing care to the middle class on cost-sharing principles. On the other hand, it is just these proposals that the American Medical Association officially refuses to accept. It admits in principle the necessity for all the others. It even acknowledges the desirability of cash benefits for disability due to sickness. A certain amount of experimentation with voluntary insurance, carefully conditioned, it is willing to countenance. But compulsory health insurance or other comprehensive programs to meet the needs of the marginal income class are excluded from consideration. Such a division between laymen and physicians can have only deplorable results. The temper of the public will not brook complete inaction. Will organized medicine, by offering co-operation, aid in the development of an intelligent comprehensive plan for the provision of medical care, or will it wait until some system is imposed upon the country with defects that can be removed only by years of further effort?

A SURGICAL APPROACH FOR LIGATION OF A PATENT DUCTUS ARTERIOSUS*

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THE last three decades have brought forth outstanding achievements in cardiac surgery. Beginning with the first successful suture of a human myocardium by Rehn[12] in 1896, this branch of traumatic surgery was further developed by Beck,[2] Elkin[9] and Bigger,[5] who contributed greatly to the repair of wounds of the heart inflicted by gunshot or stabbing. The early work of Schmieden[14, 15] and the later advances of Rehn[13] and Churchill[6] have placed the relief of constrictive pericarditis on a practical basis which is now productive of highly successful results. Cutler's[7] pioneer operations on stenosed mitral valves have given a new impetus to the designing of procedures for direct attack on cardiac lesions. More recently Beck[3, 4] and Davies, Mansell and O'Shaughnessy[8] have been able to establish an accessory blood supply to the myocardium in patients with coronary sclerosis or occlusion. However, the exploitation of congenital defects of the heart has thus far been limited to the cardiac envelope. In this field Ladd[11] has successfully repaired a diaphragmatic hernia associated with absent pericardium in which there was herniation of intestines into the thoracic cage around the heart. It now appears that another congenital abnormality, namely a patent ductus arteriosus, might well be brought to the surgeon's attention, for it is probable that the closure of this persisting and anomalous vessel would be a worthwhile undertaking. This paper presents a method whereby the ligation of a patent ductus may be accomplished.

Many of those born with a patent ductus live

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for fifty, sixty or more years without any serious impairment of health, and complain of little more than moderate dyspnea after physical exertion. However, such a span of life is not allotted to all these patients, for the statistics of Abbott[1] show that in a series of 92 autopsied subjects who had this lesion (and who had no other associated anomaly) the average age of death was twenty-four. Twenty-one of these patients died of subacute bacterial endarteriiis of the pulmonary artery, 24 died of slow cardiac decompensation, and 16 died of sudden cardiac failure. These figures indicate that

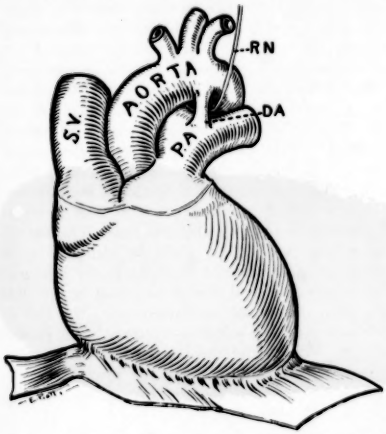

FIGURE 1. *Sketch of Heart and Great Vessels, Showing Position of the Ductus Arteriosus in Man.*

The aortic end of the ductus lies opposite the origin of the left subclavian artery. The pulmonic end of the ductus opens far back on the pulmonic artery near the origin of the left pulmonic artery. In some instances the ductus communicates with the left pulmonic artery proper rather than with the main trunk. The left recurrent nerve curves around the aortic arch, passing posterior to the ductus. D.A., *ductus arteriosus;* R.N., *recurrent nerve;* S.V., *superior vena cava.*

the child or adolescent person who has a patent ductus has about a 66 per cent chance of dying prematurely because of the presence of this anomalous vessel and the complications to which it may lead. Therefore, surgical procedures which are designed to obliterate the ductus could carry a very high mortality and still offer the patient a better prognosis than if his lesion were left untreated. It is reasonable to believe that an experienced operator could explore the ductus and ligate it with a mortality rate of 10 per cent or less.

One might argue that there are obstacles which militate against surgical obliteration of a patent ductus. For example, there may be some associated anomaly such as coarctation of the aorta proximal to the aortic opening of the ductus, or congenital stenosis of the pulmonic valve. In either case the persistence of the ductus probably represents a compensatory mechanism and surgical closure would be a fatal procedure, or at least would further embarrass an impaired circulatory apparatus. In the series of 242 cases of patent ductus reviewed by Abbott 150 cases showed associated anomalies of importance but the more serious ones usually led to death in the early weeks or months of life. Thus, if surgical intervention for ligating patent ducti is deferred until children are six or seven years old, the more complicated cases are ipso facto weeded out. Even then it is necessary to exercise close judgment in the selection of cases for operation, in order to select the individual who has a patent ductus and yet has no other serious abnormality.

The objection might be raised that surgical closure of a ductus is undesirable because the persistence of the passageway is prima-facie evidence that it is needed and would have closed off spontaneously if it had not been. The answers to this objection are twofold: first, there are many case reports with careful autopsy examinations appearing in the literature which show that the ductus can persist as a solitary lesion; secondly, if for any reason the ductus has failed to close in the early weeks of life, subsequent closure by natural processes is more difficult, because the vessel gradually becomes so dilated that its walls do not fall together and coalesce so easily as they do in the newborn.

With these considerations in mind, it seemed well to seek a way in which the ductus could be approached and ligated without undue risk. The first efforts to explore the possible routes were made on human postmortem material. The classic mediastinal approach was made anteriorly; portions of the second, third and fourth ribs on the left were removed and adjacent portions of the sternum were rongeured away, employing much the same exposure as that used for removing emboli from the pulmonary artery. However, it soon became apparent that this exposure was unsatisfactory because the bony orifice of the wound (in children) was too small unless a very extensive and time-consuming removal of most of the sternum was undertaken. Furthermore, the position of the ductus in some cases was so posterior on the aortic arch and the pulmonic artery that with the anterior approach the operator would be work-

ing in the apex of a deep wound, where it would be difficult to avoid injury to the recurrent laryngeal nerve, and where it would be hard to control any bleeding which might occur.

Subsequent investigation led me to the belief that the ductus could be more easily approached via the left pleural cavity (Fig. 2). With this

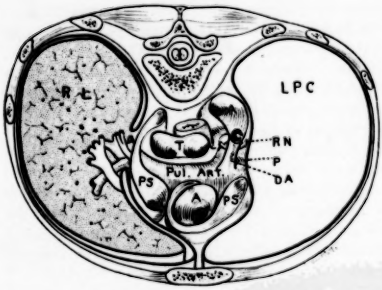

FIGURE 2. *Sketch of Horizontal Section through Human Thorax at Level of Fifth Vertebral Body, Showing Relations of Aorta, Pulmonic Artery, Ductus Arteriosus and the Left Pleural Cavity.*

The left pleural cavity is shown as being empty, for if the left lung is allowed to collapse by opening the pleural cavity, the lung falls downward below this horizontal plane. Surgical attack on the ductus can then be readily made through the left pleural cavity merely by incising the parietal pleura which covers the mediastinum in this region. After the ductus is ligated, the left lung can be re-expanded and the chest wall closed. A, *ascending and descending aorta;* D.A., *ductus arteriosus;* L.P.C., *left pleural cavity;* P, *parietal pleura covering the mediastinum above the lung root;* P.S., *pericardial sac;* PUL. ART., *pulmonary artery;* R.L., *right lung;* T., *trachea at its bifurcation.*

route through the lateral side of the chest, the lung can be allowed to collapse temporarily. The pleura on the mediastinal surface of the pleural cavity can then be incised and a direct and excellent view of the aortic arch, the pulmonary artery and the ductus can be obtained. The exposure by this approach is excellent, and is adequate to control any emergency which may arise, such as bleeding from some small neighboring vessel. After ligation or division of the ductus has been effected, the lung can be expanded with positive pressure through an inlying tracheal catheter and the thoracic cage can be closed.

The feasibility of such a proposal was demonstrated on dogs. After reviewing the local anatomic relation on several canine cadavers, the operative steps were performed on twenty living mongrel dogs. Intravenous Nembutal anesthesia (35 mg. per kilogram of body weight) was employed in each case, and an intratracheal catheter was connected with an Erlanger positive pressure apparatus, so that the latter would be available after the thorax was opened. With the left anterolateral aspect of the dog's chest upward, and the left foreleg pulled up over the head, incision was made over the third intercostal space from the sternum to the left midaxillary line. Incision was carried through the lower portions of the pectoral muscles and through the intercostal muscles to gain entrance to the chest. The third and fourth ribs were now cut through at their respective costochondral junctions so that the ribs might be spread widely apart with a self-retaining retractor. A moist gauze sponge was then laid over the lung, which collapsed into the inferior part of the pleural cavity, thus affording an excellent view of the mediastinum in its left lateral aspect. The pleural covering of the mediastinum was incised longitudinally and the ligamentum arteriosum (the obliterated remnants of the ductus of Botalli) was freed around its circumference so that it could be doubly clamped, divided and tied. The left recurrent laryngeal nerve could be identified as it coursed around the arch posterior to the ligamentum arteriosum, and this nerve could be left undisturbed during the manipulations. The thorax was now closed by bringing together the intercostal muscles — expanding the lung with positive pressure before tightening up the last stitch. The repair of the chest wall was completed by suturing the divided muscles and skin.

In no case was a patent ductus found in a dog. However, the rehearsal of the operative steps in this fashion amply demonstrated that an excellent view of the ductus region could be obtained by this route; that the areolar tissues between the aortic arch and the pulmonic artery could be safely dissected in spite of the rhythmical beating of these vessels and the respiratory motions of the thorax; that the collapse of the lung causes no immediate or subsequent embarrassment if the lung was re-expanded at the end of the operation; and that this procedure gave no operative mortality in dogs.

The success of the above exposures on dogs appeared to be substantiated by practicing the operative steps on a number of cadavers of children varying from three months to twelve years of age. Incision through the left third intercostal space from the sternum around to the mid-axillary line places the wound at about the optimum level for viewing the aortic arch from the side. Division of the rib above this incision at its costochondral junction and insertion of a self-retaining rib spreader greatly increases the size of the wound.

To approach this portion of the third intercostal space, the skin incision can be made directly over the area in the male, but in the female it is better for cosmetic reasons to make a much lower cutaneous opening — cutting well below the breast tissue, and then turning upward a flap of skin and covering of the mediastinum between these four structures brings one immediately down on the ductus arteriosus. It is best to incise this pleural covering in a cephalocaudal direction, rather than transversely, for this involves less danger of severing the recurrent layrngeal nerve and the cardiac

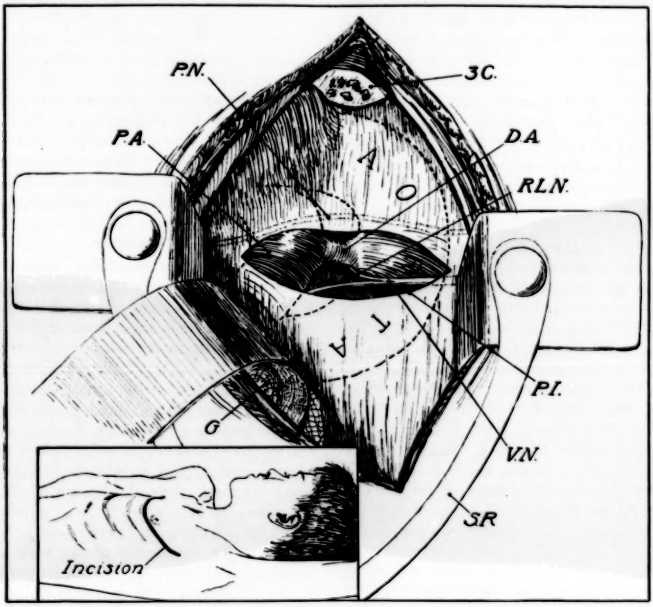

FIGURE 3. *Sketch Showing View of the Human Mediastinum as Seen at Operation by an Anterolateral Approach through the Left Pleural Cavity.*

Incision is made through the third interspace. The third costal cartilage is cut, and the third rib is retracted upward. The lung is held down in the bottom of the pleural cavity with a ribbon retractor. The pleural covering of the mediastinum is incised, and the ductus arteriosus is adequately exposed between the aorta and pulmonary artery. 3C., *cut end of third costal cartilage;* D.A., *ductus arteriosus;* G., *gauze pack over compressed lung;* P.A., *pulmonary artery;* P.I., *pleural incision;* P.N., *phrenic nerve;* R.L.N., *recurrent laryngeal nerve;* S.R., *self-retaining retractor;* V.N., *vagus nerve. The insert shows the position of the skin incision.*

muscle until the third intercostal space is reached.

When the parietal pleura is opened the lung collapses and is packed away in the middle and inferior portions of the pleural cavity with moist sponges; this permits a wide view of the mediastinum above the level of the lung hilum. Excellent landmarks (Fig. 3) to the desired ductus area are the aortic arch above, the left pulmonic artery below, the phrenic nerve anteriorly and the vagus nerve posteriorly. Incision of the pleural fibers from the vagus nerve. For a similar reason, it is best to keep this incision somewhat anteriorly toward the phrenic nerve and peel the pleura backward, allowing it to carry with it any small cardiac fibers which are adherent to its surface but too small to be seen. In the great majority of cases the region between the aortic arch and pulmonic artery can be exposed without opening the pericardial sac, but in a few of the cadaver specimens the pericardium had a very high reflection

and had to be opened in order to reach the ductus. While opening of the pericardium necessitates some loss of the pericardial fluid, it should not add any particular risk to the operation.

After the arch and the pulmonic conus are exposed, these two structures can be separated by blunt dissection, stripping away the areolar tissue which loosely binds them together. The most important structure to identify and scrupulously avoid is the left recurrent laryngeal nerve which loops around the aortic arch, passing lateral and posterior to the ductus. This structure may lie within a few millimeters of the ductus, but it can be readily freed and can be pushed posteriorly if necessary.

In no case have I encountered any difficulty in identifying this nerve in human material (in contrast to the dog), and operators should have no trouble in locating it and preserving it intact.

The diameter of the persistent ductus has little bearing on the possibility of ligating it, for a vessel 1 cm. in diameter could be obliterated almost as easily as could a vessel 2 or 3 mm. in diameter. However, the length of the ductus is of considerable importance. If the vessel is 0.5 cm. or more in length it can be easily freed around its circumference and a tie placed on it, whereas a shorter vessel may defeat all efforts to free it and may make it impossible to place a circumambient ligature with any degree of safety. Should one be forced to deal with a ductus which is very wide and very short, it would probably be necessary to divide the ductus completely and to suture the defects in the aorta and the pulmonic arteries individually.

After the ductus is tied, the pleural covering of the mediastinum can be rapidly closed with a few interrupted stitches in order to smooth off the interior of the pleural cavity at this point. The thorax is then closed with a continuous catgut suture to the intercostal muscles, but before tightening the last stitch the lung is completely expanded by increasing the intratracheal pressure via the anesthesia machine. The severed digitations of the pectoralis muscles are now brought together to restore their continuity, and the subcutaneous fascia and skin are approximated with interrupted sutures.

The anesthetic in human cases may be ether, but Cyclopropane is preferable. The use of a gas machine with either an inlying tracheal catheter or a closely fitting face mask is essential, because the anesthetist must be prepared at all times to give positive pressure when needed. This machine is of particular value when the chest is being closed and it is desired to re-expand the lung.

This method of exploring and ligating the ductus is a practical procedure which can be employed for human beings, for I have recently undertaken the operation on 4 patients (Fig. 3). Each of them survived the operation and had a remarkably smooth postoperative course without complications. The loud murmurs heard before operation have been reduced to minimal ones in 2 cases, and have completely disappeared in the other 2, in which double ligature was employed. The precordial thrill has disappeared in every case. In 2 patients there has been a reduction in the size of the heart postoperatively. In each case the low preoperative diastolic pressure has permanently risen 25 to 35 mm. of mercury to a normal level. The success of the procedure suggests that the operation should be performed in certain selected cases as a safeguard against the dangers of subacute bacterial endocarditis or cardiac decompensation.

SUMMARY

The rationale for proposing surgical ligation of a patent ductus arteriosus is briefly presented. It appears that a number of individuals may enjoy a long life with this lesion and yet not suffer any important consequence. However, the adolescent child who possesses this abnormality faces such a great probability of serious complications arising from the patent ductus that surgical attempts to close the persisting vessel seem definitely justifiable.

A method has been devised whereby the patent ductus arteriosus can be adequately exposed by a lateral approach through the left pleural cavity. The safety of this exposure was amply demonstrated by practicing and perfecting the procedure on dogs. The superiority of the lateral route as compared to an anterior, transmediastinal opening was readily shown by examination of human postmortem material. This operation has been successfully performed on 4 patients.

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CITRATES IN THE TREATMENT OF INFANTILE RICKETS*

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TREATMENT of infantile rickets with potent preparations of vitamin D leaves little to be desired. Indeed, the resultant cure is so satisfactory that it has tended to prevent an advance in our understanding of all the factors concerned in the pathogenesis of the condition. Presumably vitamin D cures rickets primarily by increasing the absorption of calcium, which in turn permits an increased absorption of phosphorus.[1] But other factors besides vitamin D affect the absorption of calcium and phosphorus and the healing of rickets. The most important of these are the levels and ratios of calcium and phosphorus in the diet, the acid-base value of the diet and its content of certain organic acids, especially citrates and to a lesser extent tartrates. The evidence for the last two of these factors is largely derived from animal experiments. It has recently been reviewed,[2, 3] and need not be presented here.

Although much has been learned about rickets from animal experiments, information derived therefrom can be applied to infantile rickets only by analogy. We have therefore been eager to try citrate mixtures, so effective in curing rickets in rats,[5] in the treatment of infantile rickets. Aside from the theoretical interest, the cure of rickets by factors other than vitamin D is of specific interest in the treatment of rickets resistant to vitamin D,[4] and perhaps other disturbances of calcium and phosphorus metabolism. Albright and Sulkowitch[6] have observed beneficial results from the administration of citrate mixtures in a patient with nephrocalcinosis. Moreover, such factors are of general significance for an understanding of the principles determining the adequacy of diets. The beneficial effects of large amounts of orange juice on calcium and phosphorus retentions, as observed by Hanke[6] and Chaney and Blunt,[7] may have to be re-evaluated in terms of the citrate content of such diets.

The paucity of untreated rachitic subjects at this clinic during the past two years has made available only 2 patients with infantile rickets in whom citrate mixtures could be used as the antirachitic agent. We are fully aware that neither case was ideal for such experimental work. The complicating factors are given in the case histories and considered in the discussion. The prospect of obtaining more satisfactory cases in the near future is so doubtful that these preliminary results are reported so that this therapy may be given further trial by others.

Case 1 (No. I. 22318). E. S., an 11-month-old Negress, entered the hospital with the chief complaint of an upper respiratory infection of six days' duration, and cough, fever, anorexia and vomiting of 2 days' duration. She was born at term after a normal labor and weighed 8 pounds. She had never received cod-liver oil or vitamin D concentrate.

Physical examination showed a well-developed and nourished infant with pronounced parietal and frontal bossing, an anterior fontanelle of 6 cm., rachitic metaphyses at both wrists and rachitic rosary. The temperature was 103°F., pulse 150 and respirations 50. The pharynx and both eardrums were red. There were signs of bronchitis throughout both lungs. There was a moderate-sized umbilical hernia. Roentgenograms showed advanced active rickets and generalized decalcification.

The patient was put on a non-irradiated evaporated milk, Karo, and water formula and given 50 mg. of ascorbic acid per day, but no vitamin D. Hemolytic streptococci were recovered the next day from a throat culture and 20 gr. of sulfanilamide were given by mouth, and thereafter for the next 12 days 5 gr. every 6 hours. At the same time a small area of pneumonic consolidation of the lung was demonstrated by roentgenograms. The temperature fell to within normal limits within 24 hours and remained normal throughout the hospital stay. The signs of pneumonia rapidly cleared.

On the 9th day a citric acid-sodium citrate mixture of 20 cc. of molar citric acid* and 30 cc. of molar sodium citrate† was added to the formula as a diluent for the milk. This was continued for the following 36 days. During this period the patient gained in weight from 16.5 to 18.5 pounds.

Table 1 gives the concentrations of serum calcium, inorganic phosphorus, phosphatase and protein, the roentgenographic information concerning the rachitic changes and the diet during hospitalization. On the 45th day the rickets had healed so satisfactorily that the citrate mixture was discontinued, percomorph oil was prescribed and the patient was discharged home.

Case 2 (No. I. 22224). D. D., a 5-month-old Negro, was admitted to the hospital with a chronic cough of 6 weeks' duration. The baby was born following a normal labor and weighed 8.5 pounds. He was said to have received daily ½ teaspoonful of cod-liver oil and 2 teaspoonfuls of orange juice during the 4 weeks before admission. He was well until 6 weeks before admission, when he developed an upper respiratory infection. During the 2 weeks preceding entry he lost 2 pounds in weight.

Physical examination showed a baby with a rasping

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*$H_3C_6H_5O_7 \cdot \frac{1}{2} H_2O$, 210 gm. per liter.

†$Na_3C_6H_5O_7 \cdot 5\frac{1}{2} H_2O$, 357 gm. per liter; $Na_3C_6H_5O_7 \cdot 2 H_2O$, 294 gm. per liter.

cough, a temperature of 101°F., a pulse of 140 and respirations of 50. The general musculature was flabby, and the abdomen was protuberant. There was a small umbilical hernia. The anterior fontanelle measured 6 cm. Craniotabes, beading of the costochondral junctions and rachitic metaphyses at the wrists were present. The pharynx and eardrums were injected. The tip of the spleen was palpable. Laboratory data included a red-cell count of 5,030,000, a white-cell count of 10,900 and a hemoglobin of 11.9 gm. per 100 cc. Roentgenograms showed considerable decalcification, a widened uncalcified zone at the ends of the diaphyses, slight lipping of the epiphyseal margins and subperiosteal new bone along the shafts of the long bones. There was considerable diffuse flocculent peribronchial congestion.

The patient was placed on a non-irradiated evaporated milk formula and given 50 mg. of ascorbic acid per day but no vitamin D. After 15 days of this control period in which there was no evidence of beginning healing of the rickets (Table 2), the citric acid - sodium citrate mixture described in Case 1 was started. The mixture was given daily in the formula from the 16th to the 41st day. The patient's upper respiratory infection continued about as at entry until the 14th day, when the temperature rose to 103°F., returning to normal in 2 days, again rising to 102.5°F. on the 21st day, to drop the following day to within normal limits. From then until the 39th day he did well, and gained in weight from 16.5 to 17.3 pounds. On the 39th day the temperature rose to 104°F. At this time there was an acute right otitis media but no other signs of extension of the upper respiratory infection. Roentgenograms of the chest showed that the peribronchial congestion had markedly improved. Two days later the patient showed definite signs of pneumonia, the citrate therapy was discontinued and oil of percomorphum was added to the medication. This addition of vitamin D rendered the patient's subsequent history irrelevant to this study.

Table 2 gives the concentrations of serum calcium, inorganic phosphorus, phosphatase and protein, as well as further roentgenographic information concerning the rachitic changes, and the diet and therapy during the period of study. The roentgenograms presented unmistakable evidence that healing of the rickets had been initiated and was progressing. However, both the roentgenograms and the concentrations of serum calcium and inorganic phosphorus showed that healing was not complete when the experimental study was interrupted.

TABLE 1. *Summary of Data in Case 1.*

HOSPITAL DAY	THERAPY	DIET	X-RAY FINDINGS	SERUM CALCIUM	SERUM INORGANIC PHOSPHORUS	SERUM PHOSPHATASE, MODIFIED	SERUM PROTEIN
				mg. %	*mg. %*	*Bodansky units*	*mg. %*
1	Sulfanilamide	Evaporated milk, vitamin C.	Marked active rickets	9.0	1.5	22	7.1
9	Sulfanilamide	Evaporated milk, vitamin C.	Marked active rickets	8.7	2.6	26	6.3
15	Citrate*	Evaporated milk, cereal, apple sauce, banana.	Marked active rickets	8.7	3.1	27	6.8
23	Citrate	Same, plus 1 egg.†	Early healing	8.8	3.1	29	5.9
33	Citrate	Same, plus 1 egg.†	Moderate healing	6.5	4.2	28	6.3
39	Citrate	Same, plus 1 egg.†	Advanced healing	9.5	4.1	38	7.0
46	Citrate	Same, plus 1 egg.†	Advanced healing	10.3	5.7	31	6.6

*Citrate mixture started on 9th day.
†Egg added from 21st day.

DISCUSSION

The order of magnitude of the citrate dosage is readily reduced to familiar terms by stating that the amount of citrate given each patient daily corresponded approximately to that contained in five or six large oranges.

TABLE 2. *Summary of Data in Case 2.*

HOSPITAL DAY	THERAPY	DIET	X-RAY FINDINGS	SERUM CALCIUM	SERUM INORGANIC PHOSPHORUS	SERUM PHOSPHATASE, MODIFIED	SERUM PROTEIN
				mg. %	*mg. %*	*Bodansky units*	*mg. %*
2	None	Evaporated milk, no vitamin D, 25 mg. ascorbic acid.	Moderate rickets	6.3	3.2	18	6.1
10	None	Evaporated milk, no vitamin D, 25 mg. ascorbic acid.	Moderate rickets	7.8	3.2	36	—
16	None	Evaporated milk, no vitamin D, 25 mg. ascorbic acid.	Moderate rickets	8.1	2.6	21	6.0
25	Citrate*	Evaporated milk, no vitamin D, 25 mg. ascorbic acid.	Beginning healing	6.3	3.8	24	6.0
29	Citrate	Evaporated milk, no vitamin D, 25 mg. ascorbic acid.	Beginning healing	5.6	3.5	21	6.1
34	Citrate	Evaporated milk, no vitamin D, 25 mg. ascorbic acid.	Healing rickets	8.5	2.9	14	6.2

*Citrate mixture started on 16th day.

In the experiments with rats,[1] citric acid in excess of sodium citrate was found more effective than the mixture used for these patients. The present proportions were used in order to avoid curdling of the milk. Subsequently it has been found that a more acid mixture, even as much as two parts molar acid to one part molar salt, is readily taken by patients, and it seems advisable that an acid mixture should be used.

The findings given in Tables 1 and 2 indicate clearly that by x-ray evidence healing had taken place during the administration of citrates, and without vitamin D therapy. The deposition of

lime salts was first detected in these patients on the 9th and 14th days of therapy, respectively. Not only the early date at which deposition could be detected but the amount of deposition in a given time compared favorably with that obtained with cod-liver oil. In Case 1 the patient received egg yolk during the latter part of the experiment, but this was not the cause of the early healing, for it was added to the diet only after healing had already begun. In Case 2 as much infection was present throughout the control period when there was no healing as during the first 2 weeks of therapy when healing occurred. It should be noted that both patients gained in weight during the periods in which the rickets was healing.

The serum analyses in both patients showed a lowering of the total calcium and a rise in the phosphate, and subsequently in Case 1 a rise in both. In this respect the babies reacted similarly to the rats. When the calcium was at the lowest point it was feared that tetany would supervene, yet it was never manifest by either a positive Chvostek's sign or convulsions. Repeated tests of the irritability to galvanic current were made, and it was demonstrated that latent tetany also was absent. It is interesting that the product of serum calcium and inorganic serum phosphorus was not high at the time deposition of lime salts was progressing. This fact, taken with the low calculated calcium ion concentration, indicates that the mechanism of calcification is not completely described in either of these terms. The phosphatase content of the serum of both babies remained high throughout the period of observation compared with the normal range of 5 or 10 units by our modified Bodansky method. It is well known that high values may persist after other evidences of rachitic activity have disappeared, and may be found three to six months after adequate treatment. A return to normal during the short period of this study was not to be expected.

CONCLUSIONS

The evidence from the 2 cases reported indicates that mixtures of citric acid and sodium citrate induce healing in infantile rickets. This new form of therapy not only offers an adjunct to accepted measures for the treatment of infantile rickets, but also may have application to other types of disorders of calcium and phosphorus metabolism.

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REPORT ON MEDICAL PROGRESS

THE WATER-SOLUBLE VITAMINS*

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THE VITAMIN B COMPLEX

RECENT years have witnessed a great advance in knowledge of the chemical structure and physiological action of several components of the vitamin B complex. Three members of this complex are now chemically identified and have been given definitive names. The name thiamin has been recently proposed for vitamin B_1, "to emphasize that this factor is a definite chemical entity distinct from all other substances."[1] Riboflavin has been identified as one of the agents responsible for the activity formerly attributed to the hypothetical vitamin B_2 (or G). Nicotinic acid is now established as a most important factor in the prevention of pellagra, and is responsible for at least the greater part of the activity which was once attributed to the P-P (pellagra-preventive) factor. It is to be hoped that future chemical identification of other vitamins will lead to the gradual adoption of such specific names, in place of the present confusing system of nomenclature by arbitrary letters and numbers.

THIAMIN‡ (VITAMIN B1)

Chemistry

Thiamin hydrochloride is a white, crystalline substance readily soluble in water, having the formula $C_{12}H_{17}N_4OSClHCl$. It is easily destroyed by heat, particularly in alkaline solution. It can be synthesized on a commercial scale, and the synthetic product is now available for therapeutic purposes.

Physiology

Recent work has progressed far toward providing an understanding of the part played by thiamin in the metabolism of the body. There is now no doubt that it is an essential factor in the enzyme systems concerned with carbohydrate metabolism. Thiamin deficiency both in man[3] and animals[4] may result in an accumulation of pyruvic acid ($CH_3CO.COOH$) in the blood. This substance is a product of glycogen breakdown, and it has been shown that thiamin is capable of catalyzing the oxidative removal of pyruvic acid from the tissues of animals deficient in this vitamin.[5] The diphosphate of thiamin has lately been identified as the co-enzyme activating yeast carboxylase which removes carbondioxide from pyruvic acid, converting it to acetaldehyde (CH_3CHO).[6] However, it has not yet been shown with certainty that it is precisely this reaction with which thiamin is normally concerned in the body. It is possible that thiamin may play a part in several other fundamental metabolic processes, including the conversion of carbohydrates to fat.[7]

Animal Pathology

Animals fed on a thiamin-free diet lose their appetite, become thin and after several weeks develop a severe disturbance of the nervous system characterized by opisthotonos and inco-ordination. This disturbance is not the exact counterpart of the human disease beriberi, since it is evidently due to disordered metabolism of the nervous system rather than to anatomic lesions in the peripheral nerves. This is proved by the fact that the condition is dramatically cured within a few hours by the administration of pure thiamin. It is reasonable to suppose that the course of complete thiamin deficiency is too rapid to allow time for the development of definite anatomic changes in the nerves, but that such changes might result from chronic, though partial, deficiency of thiamin. This, however, is difficult to prove experimentally, since it is impossible to maintain thiamin-deficient animals in a state of good general nutrition on account of their anorexia, and degeneration of nerves can occur as a result of simple starvation.[8] True polyneuritis can be produced by partial deficiency of the entire vitamin B complex,[9] but also by diets adequate in thiamin and lacking only the other factors in the complex.[10] It seems clear, therefore, that thiamin deficiency is not the only etiologic factor in the production of nutritional polyneuritis in animals.

Human Pathology

Ever since the first differentiation of the vitamin B complex into more than one component, the heat

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‡For additional information the reader is particularly referred to Williams and Spies's book on thiamin.[2]

labile component (thiamin) has been regarded as the "anti-neuritic" or "anti-beriberi" factor, because it will cure in animals a disease which in some respects resembles human beriberi.

Beriberi is a disease endemic in those parts of the world where milled rice is the staple cereal. Its first symptoms are loss of appetite and muscular weakness. Thereafter cardiovascular and neurologic signs develop and, according to which predominates, the disease has been differentiated into "wet" and "dry" types. The former probably represents the more acute and complete deficiency. Both the cardiovascular[11] and neurologic[12] manifestations of beriberi have recently been recognized in this country, occurring in cases of chronic alcoholism and occasionally in other subjects whose diet has been grossly abnormal. For further descriptions of these manifestations the reader is referred elsewhere.[11, 14] Briefly stated, the cardiovascular changes include edema, peripheral vasodilatation, tachycardia, cardiac enlargement and a liability to sudden circulatory collapse. The neurologic changes are those of the multiple sensory and motor neuritis formerly described as alcoholic polyneuritis, which has now been shown to be primarily due to nutritional deficiency rather than to the toxic effects of alcohol.[18]

It has long been recognized that beriberi can be cured by the administration of substances rich in vitamin B complex, but until very recently pure thiamin has not been obtained in amounts sufficient for clinical trial, and for this reason it has been impossible to determine with certainty the part played by thiamin deficiency in the development of the characteristic features of the disease. It now appears certain that the cardiovascular manifestations are a direct effect of thiamin deficiency, since administration of this vitamin complex results in most dramatic cures.[11, 16] It is less easy, however, to establish the etiologic relation of thiamin deficiency to the development of the neurologic changes. When the latter have progressed to the point of definite demyelination, recovery is necessarily slow, and so any therapeutic test is a relatively unreliable criterion of etiology, particularly since the administration of thiamin frequently improves the appetite and the consequent increase in food consumption presents the possibility that other dietary factors may contribute to the therapeutic response. However, there have been encouraging reports of definite improvement following the administration of thiamin in cases of alcoholic polyneuritis.[17] There is also evidence that the neurologic changes in alcoholism are liable to arise when the thiamin intake becomes theoretically inadequate.[18] In connection with this observation it must be emphasized that lack of thiamin may be associated with deficiency of other factors, as is illustrated by the fact that the onset of nutritional macrocytic anemia which is clearly not due to vitamin B_1 deficiency may coincide with the time when the thiamin intake becomes inadequate.[19]

Alcoholic polyneuritis is by no means the only type of nutritional polyneuritis seen in this country. Other conditions associated with a poor diet or gastrointestinal disorders may be accompanied by similar neurologic changes, and may well have the same etiology. It has been reported that the pain and numbness in pellagra may be relieved by thiamin.[20] The polyneuritis of pregnancy may respond to dietary supplements rich in vitamin B complex.[21] There have been many reports suggesting that thiamin deficiency may be responsible for the neuritis associated with diabetes, Korsakoff's psychosis, ulcerative colitis, gastric lesions and other conditions, but more work appears to be necessary before these theories can be accepted with certainty. It has also been suggested that some cases of Landry's paralysis may in reality be a form of beriberi.[22] The changes in the spinal cord which occur in pernicious anemia are probably not an effect of thiamin deficiency,[23] and this may also be true of similar changes in pellagra, sprue, celiac disease and beriberi. It is improbable that thiamin deficiency plays any part in the development of the other manifestations with which it is frequently associated in this country, such as anemia, pellagrous dermatitis, glossitis, achlorhydria and other gastrointestinal disturbances.

In conclusion, the present evidence suggests that thiamin deficiency is a factor, but not necessarily the only one, concerned in the development of nutritional polyneuritis. The appearance of polyneuritis in patients whose food intake is poor is, however, presumptive evidence of the existence of associated thiamin deficiency.

Diagnosis

The diagnosis of thiamin deficiency at present depends on the clinical findings mentioned above and on the response of appropriate therapy. Several laboratory methods based on tests for the vitamin in blood and urine have been proposed, but none are as yet sufficiently well established to be used for routine purposes.

Assay and Units

At present the only available method for estimating thiamin in foods is by feeding tests in animals. It has been usual to express the results of such tests in various arbitrary units, but now that pure thiamin is available as a standard of compari-

son it is obviously preferable to express vitamin B_1 potency in terms of pure crystalline thiamin. Unfortunately there are difficulties in converting the units formerly employed into terms of pure thiamin. The best compromise value at the present is probably that one international unit equals 3.3 micrograms of thiamin chloride. For discussion of other units formerly employed the reader is referred elsewhere.[2]

Sources

Thiamin is present in a great variety of foods, but no one article is a particularly potent source. The concentration of thiamin in most foods is about one part in a million. Bio-assay is at present the only available method of estimating thiamin in foodstuffs, and owing to the disparity of results obtained by different types of feeding tests the thiamin content of different foods can be stated only in very rough terms. Some of the richer sources of the vitamin and their approximate thiamin content are given below:*

	mg.
One cup of milk (250 cc.)	0.1
One helping of beef (100 gm.)	0.05
One helping of pork or ham (100 gm.)	0.3
One helping of liver, kidney or heart (100 gm.)	0.2
One egg	0.05
One helping of most vegetables (100 gm.)	0.05-0.1
One orange or other fruit of similar size (120 gm.)	0.06
30 peanuts (30 gm.)	0.24
One slice of white bread (25 gm.)	0.01
One slice of whole-wheat bread (25 gm.)	0.1

It will be seen from these figures that pork, ham, liver and peanuts are unusually good sources of the vitamin, and that whole-wheat bread is a distinctly better source than white bread. Dried brewer's yeast is a very potent source of thiamin, and usually contains about 0.1 mg. per gram.

The thiamin content of the food may be greatly influenced by the method of cooking. Though fairly stable to heat in acid solution, in the presence of alkali (as when sodium bicarbonate is added to preserve the color of vegetables) it is soon destroyed at the temperature of boiling water. The process of baking and the use of baking powder are both liable to lead to considerable destruction of thiamin. Much of the vitamin may be dissolved and lost if fruits and vegetables are boiled in a large volume of water which is afterward discarded. In general it can be said that much of the thiamin in an ideal diet is provided by milk, meat, eggs, fruit and vegetables, and that if the supply of these more expensive foods is restricted it becomes increasingly important to provide whole-wheat bread and flour in place of refined cereals.

Requirements

The thiamin requirements of an adult have been shown to be dependent on both weight and caloric intake[24] and, perhaps more specifically, on the carbohydrate consumption.[2] Thus the minimum requirement of a man weighing one hundred and forty pounds consuming 2000 calories daily is probably about 0.5 mg., while a man of two hundred pounds weight consuming 3000 calories may require at least twice this amount. This fact may explain why thiamin deficiency is liable to arise in alcoholic subjects whose consumption of foods rich in thiamin is frequently low, while their caloric intake (in the form of alcohol) is high.[18] It may also explain why signs of thiamin deficiency are rare in cases of general inanition with a reduced intake of both thiamin and total calories. It further indicates that thiamin deficiency is particularly liable to arise in patients whose metabolic rate and caloric consumption are raised, as in hyperthyroidism.[25]

The present evidence suggests that a safe optimum allowance for an adult is between 1 and 2 mg. of thiamin daily. It is probably particularly important to maintain an optimum allowance during lactation. This is suggested by the frequency of infantile beriberi in those parts of the Orient where the usual diet is on the borderline of thiamin deficiency, and by the fact that the thiamin requirement of rats increases during lactation. Little is known of the thiamin requirements of childhood, but several reports of improved weight gain following the administration of substances rich in vitamin B^{26} suggest that the diet of children in this country may sometimes fall short of the optimum in thiamin content. It is probably wise at the present time to assume that children require at least as much thiamin as adults.

Therapy

Thiamin is specific in the cure of the cardiovascular manifestations of endemic and alcoholic beriberi.[11, 16] Because of the danger of sudden circulatory collapse, treatment of such cases should be started early, and thiamin should be given parenterally to ensure rapid action. Initial doses of 20 to 50 mg. daily given intravenously, or perhaps better intramuscularly, are recommended. The dose may be reduced to 10 mg. when definite improvement begins and so maintained until recovery is assured. These doses may in most cases be greater than is really necessary; however, there need be no fear of ill effects from using these amounts. Parenteral administration of thiamin is indicated in cases of nutritional polyneuritis in which there is evidence of gastrointestinal disturbance, and consequently the possibility of defective absorption of substances given by mouth. Daily doses of from 2 to 10 mg. may be given, according to the severity of the case. It should be re-

*Adapted from Williams and Spies.[2]

membered that thiamin deficiency rarely occurs without associated deficiency of other factors of the vitamin B complex, and, as pointed out above, these associated deficiencies may perhaps contribute to the development of polyneuritis. For this reason the best therapeutic results are not likely to be obtained from the administration of thiamin alone. At the present time there is no preparation suitable for parenteral administration of the entire vitamin B complex. In cases where intestinal absorption is likely to be grossly impaired the need may be partly provided for by the injection of liver extract and nicotinic acid as well as thiamin. In most cases, however, oral administration of vitamin B complex is entirely satisfactory. This is most easily provided by powdered brewer's yeast. Thirty to 90 gm. daily is a suitable therapeutic dose, taken in milk or warm salted water. The administration of yeast by mouth is probably sufficient treatment for most cases of mild neuritis associated with alcoholism and other nutritional disturbances. It is useful in the prevention of polyneuritis in cases of hyperemesis gravidarum, and is also worth a trial in diabetic and post-infectious neuritis. In the absence of certain knowledge of the etiology of Korsakoff's psychosis it would seem advisable to administer large doses of all the components of the vitamin B group in the form of thiamin, nicotinic acid and liver extract by injection, and brewer's yeast by mouth. It should be remembered that patients with advanced neuritis and definite neurologic changes inevitably recover very slowly and often incompletely. This calls for perseverance in treatment in spite of only gradual improvement. Anorexia in the absence of other definite findings may occasionally be due to vitamin B deficiency, and its treatment may reasonably include the oral administration of yeast. This is particularly true in cases of underweight children with poor appetite. Three teaspoonfuls daily of autolyzed yeast is recommended as a suitable dose.

NICOTINIC ACID

Nicotinic acid has been familiar to organic chemists for many years, but it was not definitely recognized as a factor in the vitamin B complex until the end of 1937. It is a white, crystalline, heat-stable, water-soluble, easily synthesized substance with the simple formula C_5H_4N COOH.

Physiology

Prior to its recognition as a vitamin, nicotinic acid was identified, in the form of its amide, as an essential constituent of an important enzyme system. Codehydrogenase (cozymase) is composed of nicotinamide, ribose, phosphoric acid and adenine. This compound has been shown to be capable of activating dehydrogenases, which are an important group of enzymes concerned with the oxidation of many organic molecules in the tissues. It thus appears that nicotinamide is an important factor in normal tissue oxidation.

In 1937 it was discovered that nicotinic acid will cure blacktongue, a deficiency disease of dogs analogous to pellagra.[27]

Human Pathology

Space does not permit any description of pellagra. For a full account of this disease the reader is referred to an excellent review on the subject.[28]

Sources

There has not yet been time to determine with certainty the distribution of nicotinic acid in foods, but judging by what was previously known of pellagra-preventing diets it must be present in physiologically active amounts in those foods which are also good sources of thiamin. It is certainly present in yeast and crude liver extract.

Therapy

It now seems evident that nicotinic acid is a specific curative agent for many of the clinical manifestations of both alcoholic and endemic pellagra.[29–31] Thus the mental symptoms, diarrhea, mucous-membrane lesions and the erythematous element of the dermatitis are all dramatically cured by nicotinic acid therapy. The neurologic manifestations, however, are apparently not affected.

The most effective dose of nicotinic acid has not yet been determined. The daily oral administration of 500 mg. in five divided doses has been recommended as usually effective. It has also been given intravenously in doses of 10 mg. five times daily in sterile saline.[32] The oral and parenteral administration of nicotinic acid is often accompanied by tingling sensations, increased gastric motility and dilatation of peripheral blood vessels, which suggests that larger doses than those recommended above might result in further undesirable reactions.

Since it seems probable that nicotinic acid therapy will leave unaffected at least some of the manifestations frequently associated with pellagra, it seems advisable to use nicotinic acid as an additional therapeutic weapon rather than as a substitute for the former treatment by good diet, yeast and liver extract,[33] though probably the doses of these latter need not be so large as formerly.

OTHER FACTORS IN THE VITAMIN B COMPLEX

The other factors in the vitamin B complex will not be discussed in detail here, since at pres-

ent little is known of their importance in human nutrition. They have been recognized as indispensable to adequate nutrition in various species of animals. Future research may clarify their present complexity by chemical identification, and perhaps demonstrate that some of the factors at present described as separate entities are really identical. One of them, riboflavin, deserves mention, since it has been chemically identified and synthesized and has been shown to be the "prosthetic" or active group of Warburg's yellow enzyme, which plays an important part in normal tissue respiration. This fact suggests that it is probably an indispensable factor in human nutrition, and although no definite clinical manifestations have yet been attributed to deficiency of riboflavin and of the other remaining factors of the B complex, their importance in animal nutrition indicates that some, at least, are likely to be necessary for man. The distribution of riboflavin in foods closely follows that of thiamin.[34] All the known factors are present in yeast and some, at least, in liver. Nutritional macrocytic anemia has been noted in cases in which there is also evidence of thiamin deficiency,[19, 35] and a comparable anemia in monkeys has been shown to respond to yeast but not to thiamin or nicotinic acid.[36] In this connection it is noteworthy that the extrinsic factor of pernicious anemia has been thought to be part of the vitamin B complex.[37] As has been previously stated, a polyneuritis preventable by yeast may be produced in animals receiving an adequate intake of thiamin.[10] Finally, the spinal cord changes of beriberi, pellagra, pernicious anemia and sprue may be due to deficiency of one or more of the unidentified factors of the vitamin B complex. Demyelination of tracts in the spinal cord has been produced in pigs by a diet adequate in thiamin and riboflavin but deficient in other factors of the vitamin B complex.[38]

In conclusion, it may be said that besides thiamin and nicotinic acid there may yet be other factors in the vitamin B group which are almost equally important. For this reason, patients who show evidence of vitamin B group deficiency should be treated not only with synthetic thiamin or nicotinic acid, but also with liberal doses of the entire complex in the form of yeast, and with foods that are rich both in thiamin and in the factors associated with it.

Ascorbic Acid (Vitamin C)

Chemistry

Since vitamin C has been isolated and synthesized it has been given the names cevitamic acid and l-ascorbic acid, both of which are now in common use. It is a white, crystalline substance, freely soluble in water, with the simple formula $C_6H_8O_6$. It is very readily oxidized by the loss of two hydrogen atoms, to 2-dehydro-ascorbic acid. This change can be reversed by reducing agents. But if oxidation proceeds further than dehydro-ascorbic acid the vitamin is irreversibly changed and its activity cannot be restored.

Physiology

Little is known of the part played by ascorbic acid in the chemistry of the body. The fact that it is capable of being reversibly oxidized and reduced has suggested that it may act as a respiratory enzyme in the tissues, but there is no direct evidence for this. The highest concentrations in the body are found in the suprarenal cortex and the pars intermedia of the pituitary gland.[39]

Pathology

The pathologic changes resulting from ascorbic acid deficiency are as follows: There is a marked diminution of intercellular substance; fibrous tissue is poor in collagen; the teeth lack dentine; the growing points of the long bones are deficient in osteoid tissue, which is replaced by calcified cartilage, giving a characteristic picture by x-ray. The bone marrow is hypoplastic.[40]

Clinically, ascorbic acid deficiency results in scurvy, which is characterized by the following abnormalities: Hemorrhages are common, particularly under the periosteum; petechiae and perifollicular hemorrhages occur in the skin. The gums are swollen and boggy, and bleed easily. The teeth may be loose. Anemia is common, and in infants and children growth of the long bones is arrested.[41]

Vitamin C can be determined with comparative ease in blood plasma and urine. The estimation is reliable provided that certain precautions are taken in carrying it out. A large number of papers on the blood level and urinary excretion of ascorbic acid have recently been published. Many of the conclusions are still under discussion, but some important facts have emerged which now appear to be well established. The level of ascorbic acid in the blood plasma is very low in scurvy, usually less than 0.2 mg. per cent, and frequently so low that it cannot be estimated. A fasting blood plasma level of 1.2 mg. per cent or higher is evidence of excellent ascorbic acid nutrition. It appears that vitamin C is a threshold substance, and is excreted in the urine when the blood level exceeds 1.4 mg.[42] People who are apparently healthy show figures which range between 0.5 and 1.4 mg. per cent. A twenty-four-hour urinary excretion of less than 10 mg. is evidence of poor vitamin C

nutrition; one above 50 mg. is presumptive of excellent nutrition.[43] Since both blood level and excretion may be influenced by recent dietary intake of the vitamin, it is considered that a more accurate estimate of the "degree of saturation" of the individual can be obtained by observing the effect of a test dose of the vitamin on the blood and urine levels. There are many ways of carrying out this saturation test, and for further details the reader is referred to a recent review on the subject.[44]

Sources

Ascorbic acid occurs in most fresh vegetables. The best sources are fruit and fruit juices. One ounce of orange or lemon juice contains about 17 mg., an ounce of grapefruit juice 10 mg., of tomato juice 8 mg. and of pineapple juice 5 mg. One orange contains about 50 mg. and half a grapefruit about 40 mg.[45, 46]

Ascorbic acid is very easily destroyed by oxidation. This destruction is facilitated by heat, alkali, traces of copper and exposure to air. These factors are of practical importance in cooking vegetables. The water should be boiled (to drive off dissolved oxygen) before the vegetables are added. It is advisable to use as little water as feasible, since the vitamin is freely soluble, and much may be lost when the water is discarded after boiling. Sodium bicarbonate should never be added; the vessel used should have a lid, and should not be made of copper. Modern methods of canning do not result in any great destruction of ascorbic acid if the reaction of the food is acid, as is the case with fruit juices. Milk usually contains very little ascorbic acid by the time it reaches the consumer.[46]

Pure synthetic ascorbic acid is available for therapeutic purposes, at a price that competes with orange juice as the cheapest way of supplying the vitamin.

Requirements[44]

There appears to be a great difference between the amount of ascorbic acid necessary to prevent scurvy and the amount required to keep the body saturated with vitamin. Probably very few normal people are fully saturated, and it is extremely doubtful whether complete saturation is essential to perfect health. At the same time it seems important that the degree of saturation be well above pre-scorbutic level, in order to provide against any sudden increase in the demand for vitamin, as may happen, for instance, in infections.

Infants probably require 5 to 15 mg. a day to prevent the development of scurvy. A daily dose of 20 to 50 mg. should ensure a liberal supply. This amount is usually provided in the breast milk of a well-nourished mother, but even so, some additional vitamin may increase the margin of safety in breast-fed babies, and should certainly be given to bottle-fed babies. A recommended procedure is to start with 1 teaspoonful of orange juice daily, and increase this gradually to 2 oz. (30 mg. of ascorbic acid) by the third month.

The minimum daily requirement of children is probably about 20 mg. To obtain complete saturation as much as 120 mg. may be necessary. Fifty milligrams is probably a sufficient "safety" allowance, the amount contained in one orange. The minimum daily requirement in adults is about 30 mg., the safe allowance about 60 mg. In pregnancy this amount should be doubled.

There is good evidence that ascorbic acid is utilized with abnormal rapidity in a variety of infectious conditions.[47] In rheumatic fever and tuberculosis, for instance, the blood level and excretion rates are frequently found to be low, despite an apparently adequate intake. Although it is unlikely that ascorbic acid has any specific therapeutic value in infectious conditions, nevertheless it is well to ensure that such cases receive an ample supply.

Patients receiving special diets, particularly for gastric ulcer, frequently receive inadequate amounts of ascorbic acid. It is possible that this may be a factor in the causation of gastric hemorrhage, and it is therefore most important to insure an adequate intake of the vitamin in such cases.[48]

Treatment

In the treatment of scurvy large doses of the vitamin may be given (as much as 1 gm. a day by mouth). But it is well to remember that toxic symptoms have been reported with very high dosages. The vitamin may also be given parenterally, in the form of the monoethanolamine salt of ascorbic acid.

Evidence of the beneficial effect of ascorbic acid in other conditions, as in hemorrhagic states other than scurvy, is not as yet sufficiently definite to require mention.

CONCLUSION

In this and a preceding article,[49] some account has been given of the principal properties of the vitamins, and of their use in the prevention and treatment of nutritional diseases. Little mention has been made of the fundamental principles involved in questions of nutritional deficiency. A few of these principles, which are fully discussed in a recent article,[50] may be summarized here as an appropriate conclusion.

1. Nutritional disease may arise not only from faulty diet, but also from defective absorption and utilization of various elements in the food.

2. Dietary deficiency as seen in this country is rarely confined to deficiency of a single factor. It is therefore important that the physician should look for evidence of multiple deficiencies in any recognized case of nutritional disease.

3. The administration of pure vitamin preparations is rarely sufficient for the complete cure of any deficiency disease, and should never be considered as a substitute for a good general diet.

4. Most dietary deficiencies are best prevented by directing the inquiring patient to the grocer rather than the druggist.

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT, M.D.

TRACY B. MALLORY, M.D., *Editor*

CASE 25121

PRESENTATION OF CASE

A fifty-six-year-old married Polish tailor was admitted with marked cyanosis of the face, neck and arms and gasping respirations.

Seven weeks before admission he entered an outside hospital. He had had chronic bronchitis for forty years, dyspnea on exertion for ten to fifteen years and occasional blood-streaked sputum for three to four years. For three and a half weeks before admission to the outside hospital he had had marked swelling of the face, neck and chest with coughing, inspiratory difficulty and wheezing. Physical examination revealed obvious respiratory distress, marked swelling of the face, neck and chest, lacrimation and edema of the conjunctivae, cyanosis of the face, ears, fingers and nail beds. The veins of the neck, chest and arms were distended and did not collapse. There were many telangiectatic areas over the chest and back. There were many crackling rales at the bases of both lungs and many respiratory wheezes, especially on the left. The heart was normal. The blood pressure was 110 systolic, 70 diastolic in both arms. Examination of the abdomen was negative. There was questionable clubbing of the fingers.

The urine examination was negative. The blood showed a red-cell count of 4,500,000 with 92 per cent hemoglobin and a white-cell count of 12,400 with 78 per cent polymorphonuclears, 7 per cent large lymphocytes, 14 per cent small lymphocytes and 1 per cent eosinophils. Blood Hinton and Wassermann tests were negative. The stools were normal except that one was guaiac positive. The sputum was pale green and contained much pus, many organisms, but no acid-fast bacilli. The venous pressure in the left arm was 425 mm., in the right leg 130 mm.

He remained in the outside hospital thirty-eight days. Respirations varied from 20 to 35 per minute. X-rays revealed a widened supra-aortic shadow, probably the vena cava. Biopsy of an axillary gland was negative. Bronchoscopy showed extensive bilateral bronchiectasis, marked congestion of the entire tracheobronchial tree, but no evidence of tumor. Lipiodol confirmed the presence of bronchiectasis, most marked at the left base. His right arm became more and more edematous, but this was eventually controlled with mercurial diuretics. After each diuretic his face and arm returned to almost normal size, though the swelling of his neck persisted. His respiratory distress was not materially aided. He lost 15 pounds in weight during the thirty-eight days chiefly because he became fatigued while trying to eat for more than a very short period of time. His last diuretic caused a loss of 3000 cc. of fluid and he felt better than at any time during his hospital stay. He was discharged to his physician.

Nine days later he entered this hospital. Physical examination was similar to that on admission to the other hospital except that he was more severely affected with difficult, gasping respiration and cyanosis.

His temperature was 97°F., pulse 90, respirations 30.

X-ray films of the chest showed the right diaphragm to be unusually low, limited in excursion and irregular in outline. The left side of the diaphragm was not seen. The right lung was large and bright and there were many areas of rarefaction with thin walls, apparently blebs. There were many similar areas of rarefaction in the left lung, especially in the apex. Linear density was seen in both lungs apparently due to dilated blood vessels. There was homogeneous density at the left base rising to the seventh rib posteriorly and the gas bubble in the stomach was displaced downward below the twelfth rib. The heart and mediastinum were in normal position. Both lung roots were grossly enlarged. There was an oval mass just above the right main bronchus to the right of the mediastinum and in contact with the vena cava measuring 4 by 2.5 cm. The shadow of the vena cava appeared large above this point. The aorta was not dilated. The trachea was displaced slightly to the left just above the arch of the aorta. The carinal angle was widened and the main bronchi were indistinct. There was no evidence of disease in the bones.

Six and a half hours after entry the patient suddenly became cyanotic and had severe respiratory difficulty. An attempt was made to aspirate mucus from the larynx, and coramine was given subcutaneously and intravenously. After three minutes he stopped breathing and artificial respiration was begun. An apical heart beat was still present. A needle was introduced into the sixth right interspace in the anterior axillary line and about 400 cc. of air was easily removed with a syringe, but on holding the connecting tube under water no bubbling was seen. At this time

the apical heart beat could no longer be heard and the pupils did not react to light. He died seven hours after admission.

Differential Diagnosis

Dr. Donald King: In summary, we are dealing with a man of fifty-six who for forty years has had bronchitis, for fifteen years, dyspnea on exertion, for four years occasional blood-streaked sputum, and for ten weeks swelling of the face, neck and chest with cough, inspiratory difficulty and wheezing. There has been no fever. Physical examination showed crackling rales at the bases and some musical rales particularly on the left side. The venous pressure in the arms was high. The laboratory reported purulent sputum with no tubercle bacilli, and a negative Hinton. Bronchoscopy showed no intrabronchial tumor, but there is no note as to whether there was pressure from outside the bronchus. A biopsy of an axillary gland was negative.

There was obvious superior mediastinal obstruction and, besides this, x-ray of the lungs showed emphysema and large blebs. Lipiodol injection is said to have shown bronchiectasis. There was also fluid in the left pleural space and some masses in the region of the lung roots. We have then a chronic long-standing lung condition and superior mediastinal obstruction which has been present for about ten weeks. The first question is whether we can explain both findings by a single cause, and the decision must rest mainly on x-ray interpretation.

Let us consider first the two outstanding chronic infections, tuberculosis and syphilis. As you will see from examination of this x-ray film the appearance in the lung fields is not consistent with tuberculosis and the masses at the lung roots are not calcified tuberculous nodes. It is possible to have tuberculous mediastinitis due to breaking down of a tuberculous gland but there is no evidence here that such is the case. Syphilis must always be considered when there is mediastinal obstruction and one may have either syphilitic mediastinitis or pressure from aneurysm. In this case syphilis is ruled out by the negative Hinton and the x-ray which does not suggest aneurysm.

If you examine this film closely there is no question of the evidence of emphysematous blebs at the apices. Is there associated bronchiectasis? We have the statement that lipiodol injection did show dilatation of the bronchi but these films are not present for examination. The plain films which we do have are consistent with bronchiectasis. Is that not so, Dr. Hampton?

Dr. Aubrey O. Hampton: It is not the type of picture I usually think of as due to bronchiectasis; for the lobes involved are not reduced in size. They are blown up. The bronchi are dilated probably due to pulmonary fibrosis, but this is not the picture of the lung of bronchiectasis without emphysema. You can see honeycombed shadows throughout the lung, more marked at the right base which, if due to bronchiectasis, would indicate that there is more at the right base than elsewhere. The left base I cannot see because of a homogeneous shadow.

Dr. King: That is not collapsed left lower lobe with bronchiectasis?

Dr. Hampton: No, it does not have the shape of a collapsed lobe. There could be collapse beneath this shadow which simulates fluid. The heart is not displaced to the right; if at all, it is toward the left, and that would indicate collapse of the left lower lobe with fluid or with a mass in the lung occupying about the same space as that amount of the fluid. This upward rise of the lateral margin of the shadow does look like fluid, but I think it would be difficult to rule out a mass in that area.

Dr. King: So all the help you can give me is that there is fluid at the left base?

Dr. Hampton: With either collapse of the left lower lobe or tumor occupying the area of the left lower lobe.

Dr. King: He has large blebs at the apices. They do not show from a distance but are obvious on close examination.

Dr. Hampton: They are even more obvious in the lateral view. There are huge ones anteriorly beneath the sternum. This oval mass to the right of the trachea and above the right main bronchus is definite and above it the shadow of the vena cava is definite. In a patient with emphysema the superior vena cava shadow should be narrow; but here it is wide.

Dr. King: We agree then that there is emphysema, emphysematous blebs, fluid at the left base and either collapse of the left lower lobe or tumor in this region. We must consider next the masses at the lung root, particularly the oval mass which Dr. Hampton has mentioned. This mass looks to me like a lymph node. Do you agree with this?

Dr. Hampton: Yes. I think it is.

Dr. King: I would think so; and as far as I can tell, it is a node pressing on the superior vena cava.

Dr. Hampton: Yes, the lower end of the superior vena cava.

Dr. King: Is that mass pressing on the right main bronchus?

Dr. Hampton: I do not think so. You can see the bronchus fairly well and the carinal angle appears wide.

DR. KING: So that there are probably nodes beneath the carina?

DR. HAMPTON: Yes, that is a reasonable assumption. I would like to see a little more compression of the main bronchi than you see here. They do not seem to be very small.

DR. KING: The emphysema is probably not obstructive emphysema due to partial bronchial obstruction.

DR. HAMPTON: At any rate it is long-standing with bleb formation.

DR. KING: So we have no evidence that the mass presses on the bronchus from the outside?

DR. HAMPTON: No.

DR. KING: Granted then that this is a lymph node, may it be enlarged because of infection secondary to chronic bronchiectasis? This would be an unusual finding and there is certainly no evidence of suppurative mediastinitis with a mediastinal abscess.

DR. HAMPTON: I should not think so.

DR. KING: Let us then discard the possibility of pulmonary infection with secondary mediastinitis and consider next the emphysema and its possible relation to the mediastinal obstruction. Could emphysematous lungs press on the superior vena cava with resulting venous obstruction? Emphysema can do queer things and there are cases reported of choked disks supposedly caused by venous obstruction from emphysema. In this case, however, I do not believe that we have the right to blame the whole picture on the emphysema and forget the mass which is apparently pressing on the vena cava.

DR. TRACY B. MALLORY: We have had one case with a fairly good upper mediastinal syndrome and nothing but emphysema to explain it.

DR. KING: But he did not have a mass and fluid to go with it.

DR. MALLORY: No.

DR. KING: We are then gradually being forced to consider the mass as a tumor and the tumor as responsible for the mediastinal obstruction, but there is one further possibility which must be at least mentioned, namely thrombosis of the superior cava secondary to long-standing pulmonary infection or in association with tumor. Possible evidence of thrombosis with a fatal pulmonary embolus is shown in the last x-ray which was a postmortem film. In this film there is a shadow in the left midlung field which was not present in the antemortem films. The symptoms just before death could have been caused by pulmonary embolism although it is evident that the doctors in charge of the case believed that the sudden death was due to spontaneous pneumothorax.

DR. HAMPTON: I might say that I did not agree with the pathologist on this case. The patient was said to have had a pneumothorax. I cannot see it.

DR. KING: They put a needle in and took out 400 cc. of air.

DR. HAMPTON: A bleb could cause what they found. They could have put their needle directly into a bleb and obtained air under pressure.

DR. KING: They tapped in the anterior axillary line where many blebs were present. I assume that they got the air from a bleb. What about the shadow in the left lung field in the postmortem film?

DR. HAMPTON: I thought it was due to an acute process like pneumonia.

DR. KING: You do not want to call it an infarct?

DR. HAMPTON: No, sir.

FIGURE 1. *Small Primary Lesion of Bronchiogenic Carcinoma at Mouth of Tertiary Bronchus.*

DR. KING: We have now lost what evidence there was for pulmonary embolism and infarct and have narrowed the diagnosis to tumor of a lymph node pressing on the superior cava. There are a number of possibilities but it seems to me that the evidence is in favor of bronchiogenic carcinoma, probably primary in the left lower lobe with metastasis to the tracheobronchial lymph nodes on the right side of the trachea and beneath the bifurcation. It is true that the bronchoscopy did not show any tumor in the main bronchi but in many instances the primary carcinoma is in the fine bronchi beyond reach of the bronchoscope.

DR. FRANCIS M. RACKEMANN: What about Hodgkin's disease?

DR. KING: One always has to think of it, of course. I meant to speak of it. It is not the typical x-ray picture, is it Dr. Hampton? I should doubt if we have to consider it. You do have to consider metastatic malignancy to these nodes. It might be from the stomach or several other sources, but there is no evidence of a primary source outside the chest.

DR. HAMPTON: No.

DR. WYMAN RICHARDSON: What about congenital cyst of the lung?

DR. HAMPTON: These cavities are multiple and thin walled and they look more like blebs than congenital cysts. They are in the location you would expect blebs. They contain no fluid. There is an associated big lung and low diaphragm and a lot of evidence of pulmonary fibrosis. I cannot see how cyst would be possible.

CLINICAL DIAGNOSES

Bronchiogenic carcinoma with mediastinal metastases.
Emphysema.
Rupture of emphysematous bleb with pneumothorax, right side.

DR. KING'S DIAGNOSES

Bronchiogenic carcinoma left lower lobe with metastases to the tracheobronchial lymph nodes.
Pulmonary emphysema and emphysematous blebs.

ANATOMICAL DIAGNOSES

Bronchiogenic carcinoma of left upper lobe with mediastinal metastases and obstruction of superior vena cava.
Pulmonary emphysema.
Pulmonary fibrosis, focal.
Acute pleuritis with effusion.

PATHOLOGICAL DISCUSSION

DR. MALLORY: The postmortem examination showed, as Dr. Hampton has already indicated, one finding over which there will be some question. The thorax was punctured through a water seal and air bubbled out under pressure. This was interpreted as evidence of pneumothorax. I think x-ray evidence of pneumothorax is more reliable than such a procedure. If by postmortem x-ray they cannot find it I doubt if it is present, and what we did at autopsy was probably what was done during life—a puncture directly into an emphysematous bleb. Moreover the lung was not collapsed as one would expect with a positive pressure pneumothorax. The lung did show a severe grade of emphysema which was quite diffuse. We found little or nothing at the left base except a considerable amount of fluid. The left lower lobe was slightly but not markedly atelectatic.

DR. KING: Was the fluid bloody or clear?

DR. MALLORY: It was yellow, slightly cloudy, not bloody. There were a number of masses in the mediastinum which appeared to be enlarged carinal lymph nodes and lymph nodes in the superior mediastinum, completely surrounding the lower end of the vena cava which was evidently obstructed by pressure from without. It was not invaded and contained no thrombi at the time of autopsy. A section of these nodes showed quite clearly that they were tumor, and no obvious primary source could be found at the time, but further dissection of the lungs after fixation showed a small tumor nodule about 1 cm. in diameter in the left upper lobe fairly near to the most prominent gland that you see in the x-ray picture which microscopically is characteristic of primary bronchiogenic carcinoma.

DR. HAMPTON: How large did you say it was?

DR. MALLORY: A little over 1 cm. in diameter. The cells are very small, very uniform, and correspond fairly closely with the so-called oat-cell carcinoma although the cells are rounder than is characteristic. There was no infarction or pulmonary embolus. There was a slight diffuse dilatation of the bronchi throughout the lower lobes but no marked bronchiectasis.

A PHYSICIAN: How large was his heart?

DR. MALLORY: Normal. There was no cor pulmonale.

DR. CHAMP LYONS: We thought clinically that he had ruptured an emphysematous bleb when he had his acute episode.

DR. HAMPTON: There was no explanation of the sudden death?

DR. RICHARDSON: No embolus on the right side?

DR. MALLORY: No.

DR. RICHARDSON: Were you able to form any opinion as to the origin or cause of this emphysematous condition? It is a queer picture. This fellow started with symptoms at the age of sixteen according to the story.

DR. MALLORY: There are numerous theories of the origin of emphysema, none of which are very satisfactory. Very prolonged chronic bronchial infection is reported as one of the most frequent predisposing factors. It may or may not be associated with asthmatic paroxysms. It is usually assumed that the emphysema is produced by a process of bronchial obstruction. It is not at all clear, however, looking at the lungs of these individuals at postmortem, that there is bronchial

obstruction. A certain number of cases, and this one falls into the category, show multiple foci of pulmonary fibrosis. The lung, of course, is an elastic organ and has to fill the thoracic cavity. If some such process as organizing pneumonia, bronchiectasis or multiple infarcts destroys large areas of alveolar tissue and reduces them to minute fibrous scars the remaining lung tissue must dilate to fill their place, the volume of the thorax remaining constant. It seems to me that in a large proportion of cases of structural emphysema one can prove that a significant amount of lung tissue has been destroyed and then you get secondary dilatation of the remainder of the lung. That is not the whole story but I think it is a partial one.

Dr. William Boyd: Do you not think that this case illustrates one of the great reasons for the recent increase in the incidence of bronchiogenic carcinoma? Do you think that thirty years ago a primary tumor would have been discovered?

Dr. Mallory: I feel quite sure it would not. I think even ten years ago one might easily have passed this off as primary round-cell sarcoma of the mediastinum. Now we have become suspicious to the point where we believe bronchiogenic carcinoma through its metastases is the commonest cause of mediastinal tumor.

CASE 25122

Presentation of Case

A sixteen-year-old Portuguese schoolboy was admitted complaining of swelling of the right lower leg.

The swelling gradually appeared without a previous story of trauma during the year before entry. It was not constant but would reach a size of 7.5 cm. in width by 2.5 cm. in thickness, last two to three days, then gradually regress only to reappear after three to four days. The swelling caused a dull pain, but tenderness could be elicited by pressure over the area when the swelling was absent. The area of enlargement did not become constant until about six months before admission at which time it began to grow more rapidly, the pain becoming constant. Three months later x-rays were taken, a diagnosis of sarcoma made, and amputation advised but refused. Two months before entry two doses of x-ray treatment were given which had no effect on the mass except that it became red and very tender. Three weeks prior to admission the pain became most severe, originating in the tumor and radiating down the medial aspect of the right leg. The pain was constant and made worse by exercise or pressure. At no time had there been fever, chill or malaise. During the last three weeks he had had anorexia because of the pain. He believed that he had lost three to four pounds in weight during the last year. Both parents were living and well. He had two brothers in good health though one of them had a cleft palate. The past and family histories were otherwise noncontributory.

Physical examination showed a well-developed and nourished boy in obvious distress from a painful right leg. The general physical examination was negative except for the lesion on the leg. The blood pressure was 120 systolic, 80 diastolic. Over the anteromedial aspect of the right tibia in its middle third was a large, slightly fluctuant, red, slightly hot swelling measuring 10 by 10 by 5 cm. Slightly enlarged tender nodes were present in the right groin.

The temperature was 99.5°F., pulse 105, respirations 20.

The urine examination was negative. The blood showed a red-cell count of 5,250,000 with 75 per cent hemoglobin, and a white-cell count of 17,400 with 82 per cent polymorphonuclears, hematocrit 38 per cent. The corrected sedimentation rate was 0.45 mm. per minute. The serum calcium was 10.35 mg. per cent, phosphorus 4.8 mg. per cent, phosphatase 17.92 units. A blood Hinton test was negative.

X-ray films showed destruction of the medullary portion of the right tibia at the junction of the middle and lower thirds over an area approximately 7.5 cm. in length. The cortex was increased in thickness and showed new-bone formation arranged in "onion-skin" layers over this area. The cortex was broken through in one place over which there was a large soft tissue mass in which many bony spicules were present. X-ray films of the chest showed no evidence of metastases.

The patient felt well and his chart remained essentially normal during the first three days in the hospital. On the fourth day an operation was performed.

Differential Diagnosis

Dr. Claude E. Welch: I do not know whether we should see the x-rays first. I think Dr. Holmes might give away the diagnosis if it is what I think it is.

Dr. George W. Holmes: I know the answer.

Dr. Welch: Perhaps I had better talk first then. The problem here is to determine whether this is an inflammatory mass or tumor, our differential diagnosis between these two involving chronic osteomyelitis versus some form of bone tumor, of which I think we may exclude all types

except Ewing's and osteogenic sarcoma. In favor of osteomyelitis one might consider all the history and all the physical findings with two or three exceptions. The first and most important exception is the fact that the lesion is located in the central portion of the shaft of the tibia. The end of the tibia is the commonest spot for a chronic osteomyelitis of this type in contradistinction to a primary tumor. The increase in the white-cell count and slight fever, mean nothing in so far as the differential diagnosis of osteomyelitis and a primary tumor is concerned. When we consider the primary bone tumors of which Ewing's tumor and osteogenic sarcoma are the only two of importance in this case, we have a great deal in favor of Ewing's sarcoma. If we can trust the statement from the history that the swelling has been intermittent, we have one of the features of Ewing's tumor which is quite characteristic. Repeated small hemorrhages that occur in a very cellular tumor produce this change. They are not characteristic of osteogenic sarcoma which has much more stroma and none of these frequent fluctuations in size, nor of osteomyelitis. A Ewing's tumor should have responded to x-ray treatment if a sufficient amount had been given; we have no proof, however, that a therapeutic dose was administered. I do not think we have enough in that one statement to eliminate a Ewing's tumor. All the rest of the findings are in favor of Ewing's tumor.

Is there anything we can consider in favor of osteogenic sarcoma? The high white-cell count is unusual. I would expect in an osteogenic sarcoma with this much bone destruction and new bone formation that we ought to have an even higher serum phosphatase. The location is definitely in favor of Ewing's in contradistinction to osteogenic sarcoma, which more typically occurs in the head of the tibia. My preoperative diagnosis then would be a Ewing's tumor.

DR. HOLMES: I will continue the discussion by pointing out some of the characteristics of this lesion and the difference between osteogenic sarcoma and Ewing's tumor. I agree with Dr. Welch that we would be wasting our time to discuss the other possibilities. It is one of these two. It is a malignant tumor situated in the midportion of the shaft. It has characteristic ray formation, a soft tissue tumor, and has a considerable amount of onion-skin formation which is said to be commoner in Ewing's than in osteogenic sarcoma. It may occur in both. A localized tumor with marked ray formation is commoner in osteogenic sarcoma than in Ewing's. You would expect Ewing's tumor to extend farther up the shaft and have less of this marked ray formation. The position of the tumor is commoner in Ewing's than osteogenic sarcoma. I think from x-ray alone the preponderance of evidence is in favor of Ewing's tumor; if you take the history into consideration, it is distinctly so. I might add that the fact that he had some unknown amount of x-ray treatment would not be of any importance in this discussion.

DR. TRACY B. MALLORY: Dr. Simmons, have you any comment?

DR. CHANNING C. SIMMONS: I know the answer. All I can say is that in Ewing's tumor you often get a slightly elevated white count and temperature. The situation is typical of Ewing's, but so far as the new bone formation goes it is unusual. We have cases in the museum upstairs, however, in which there was even more bone formation than that. In this situation, however, I should favor Ewing's tumor rather than osteogenic sarcoma.

DR. MALLORY: Do you think you can trust the phosphatase reaction?

DR. SIMMONS: With as much new bone formation as in this case I should expect a high phosphatase and you can get that in Ewing's. I saw a statement that onion-skin appearance did not occur in Ewing's until after they had had radiation. It was new to me, and I should like to ask Dr. Holmes about that.

DR. HOLMES: I should doubt that statement.

DR. ERNEST M. DALAND: I should like to add one thing. This boy was seen at Pondville before coming here where he is said to have received two x-ray treatments. That was not true. He had two x-ray photographs and never received any treatment. I tried to impress that on the resident staff when he was in the hospital this time but did not get it across apparently. At the time we saw his pictures they had an onion-skin appearance without ray formation and for that reason we made the diagnosis of Ewing's tumor and advised amputation. That was refused and no treatment given.

DR. GRANTLEY W. TAYLOR: I operated on this boy and our preoperative diagnosis was Ewing's tumor. We explored the tumor which I think is the reasonable thing to do when you are confronted with the question of doing a very radical surgical procedure. An immediate frozen section revealed the nature of the lesion and, without removing the tourniquet, amputation was carried out above the level of the tourniquet. It was a thigh amputation. The gross pathological picture is said to be characteristic. I am not familiar enough with the gross appearance of these tumors to have a great deal of confidence in deciding

what they are by cutting into them. Do you want to say anything about the gross appearance of these tumors?

DR. MALLORY: I should not want to commit myself very often on the gross appearance.

DR. TAYLOR: In spite of amputation I should think that the prognosis was very poor. I think that members of the staff who have not happened to see Dr. Simmons's report of the results of sarcoma treatment at this hospital in a recent number of *Surgery, Gynecology and Obstetrics** would do very well to consult it, because he has presented his results in a very interesting fashion and also demonstrated that the prognosis in Ewing's tumor even with radical surgery is not very good.

DR. SIMMONS: I have records of twenty-five personal cases of Ewing's that I have seen here and at the Huntington and other places. Every one is dead. There are a few in the registry without evidence of disease over five years but a very few.

DR. AUBREY O. HAMPTON: We had a five-year cure with radiation, but at the sixth year he had a recurrence.

DR. MALLORY: What is the likelihood of developing pathological fracture if the lesion is untreated or treated only by radiation?

DR. SIMMONS: I have seen them occur. That is all I can say.

DR. HOLMES: I would like an opportunity to treat some of these cases in which the surgical results are bad. I think one of the reasons we failed in the past is that we did not take into consideration the extent of the disease in the bone marrow. The surgeon removes the whole bone. I should rather like to see a few cases treated that way. The result should be better.

CLINICAL DIAGNOSIS

Ewing's tumor (endothelioma) of right tibia.

DR. WELCH'S DIAGNOSIS

Ewing's tumor.

*Simmons, C. C.: Bone sarcoma; factors influencing the prognosis. Surg. Gynec. & Obst. 68:67-76, 1939.

ANATOMICAL DIAGNOSIS

Ewing's tumor of right tibia.

PATHOLOGICAL DISCUSSION

DR. MALLORY: From the gross examination of the specimen we were not able to show that it extended any greater distance along the marrow cavity than the external swelling.

DR. TAYLOR: Do you want to say anything about the difficulty of making frozen sections of these tumors?

DR. MALLORY: One is faced with considerable difficulty in that in many bone tumors a large amount of the tumor mass is going to be more or less calcified and it may prove quite impossible to cut a frozen section. If one succeeds at all one has to cut such a thick section that the results are quite unsatisfactory. The success of biopsy in these cases I think depends in about 90 per cent of the cases upon the surgeon. If he will cut really into the tumor rather than giving you only the overlying capsule and if he will choose a portion of the tumor which is soft but which is not entirely necrotic there is no reason one should not be able to make an accurate frozen section diagnosis. The selection of the material is of prime importance and that depends on the surgeon rather than the pathologist.

DR. TAYLOR: Another difficulty in the matter of biopsy is that if you are dealing with a tumor in the region of a pathological fracture you may think that you have an ideal specimen for the pathologist only to find that you have given him only nonspecific reparative tissue.

DR. MALLORY: It is quite possible for a malignant tumor to be surrounded by callus which may be difficult in gross to distinguish from the tumor. One may get a completely false impression in that way.

DR. SIMMONS: I think all the more about a remark Dr. Ernest A. Codman made here. He said that when the clinician and the radiologist are in doubt the pathologist usually is too.

DR. MALLORY: I would second that.

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GRADUATE MEDICAL EDUCATION

The recent meeting in Chicago of the Council on Medical Education and Hospitals of the American Medical Association records a definite forward step in the field of graduate medical education. For years the *Journal of the American Medical Association* has been publishing information about internships in hospitals throughout the country, and more recently it has published data concerning various residencies in approved hospitals. This information has been obtained in the course of the regular survey of hospitals which the Council has conducted for many years, but no attempt has been made to appraise these various residencies.

The Council has now developed a plan of co-operation with the American Board of Radiology for the fixing of standards of approved residencies, fellowships and graduate courses, and for the investigation of such facilities by the staff of the Council. Both organizations will co-operate in the appraisal of these graduate opportunities, and much benefit should result. It is probable that similar co-operative studies will be arranged with the other specialty boards.

There are many indications of a greater interest in graduate medical education. The arrangement at Tufts College Medical School and Boston Dispensary whereby the physicians of New England can obtain postgraduate instruction has filled a very definite need. The survey now being undertaken by the Commission on Graduate Medical Education will result in valuable information about many phases of graduate study. And this co-operative investigation by the Council and the specialty boards will make available for physicians detailed information about the opportunities for graduate training. Until the various facilities have been thoroughly surveyed and adequate opportunity afforded to comply with the standards which may be adopted, it would seem more advisable to publish a graded list of all institutions offering opportunities, as was done with medical schools at first, rather than to give merely an approved list of those institutions meeting the standards. Then after a few years have elapsed and the standards have become clarified and generally accepted, an approved list can be published. Where standards have varied greatly, or perhaps better, where definite standards have not existed, a gradual approach to the solution of the problem could well be taken, and an opportunity provided for the dissemination of knowledge about new standards and the development of means of fulfilling them. By such a program it seems reasonable to expect that this new co-operative appraisal of facilities for graduate medical study will accomplish far-reaching effects on future medical practice.

ON THE IMPORTANCE OF BEING UNIMPORTANT

The *March of Time*, as it flashes across the screen, reveals largely the activities of individuals sufficiently important to be flashed across the screen in the *March of Time*. A few of us on earth are sincerely and humbly valuable enough to our fel-

low men to be important individuals whether we will it or not; many more consider importance as an end in itself, and in achieving that end may do great good or great harm to those about us; a great many more are bent on being considered important, regardless of our deserts; and a not inconsiderable remainder either do not know what it is all about or derive a quiet satisfaction from being privates in an army composed mainly of top sergeants, if not of generals.

Unfortunately for the cause of tolerance, man's progress has been competitive since first he took his club from the antlers in the front hall and strode forth in search of his quarry. By bringing home the largest buck, the comeliest mate or the most scalps, he demonstrated his superiority over his neighbors, and became a man of importance in their eyes and his own. Modern man, being ordinarily denied such opportunities, must content himself with collecting chairmanships, getting elected to a legislature or a board of selectmen, or bringing home a senator to dinner.

It is in the blood of all of us; that desire, quite separate from the profit motive, to be set apart from others; to be on a higher, or at least a different plane. The bandit glories to be designated as Public Enemy No. 1. According to his lights he has been set above his fellow men; he has made the front page. Many of the workers in any noble cause are there for the personal satisfaction they derive from the attached recognition of merit. The good that they do to the hospital or other charity is a satisfaction also, but of secondary importance.

It is usually quite harmless, our glory-seeking, doing no great damage to others and affording considerable satisfaction to ourselves if we are naïve enough to be satisfied with this plaything. It is when an overwhelming ambition becomes linked with a conscienceless brutality that we have the large scale destruction of human happiness that may be accomplished by the hand of the dictator.

Harm to ourselves results when the ambition for leadership is coupled with an incapacity for that form of self-expression. Then the ground is laid for the neuroses due to frustration or, if ambitions are fulfilled, to the consciousness of an inability to discharge the obligations that we have brought on ourselves. Happiest is the individual who is unimportant except in those activities and to those persons whom he may claim for his own!

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S. TITUS, M.D., *Secretary*
330 Dartmouth Street
Boston

POSTPARTUM HEMORRHAGE DUE TO PARTIALLY ADHERENT PLACENTA

Mrs. A. C., a thirty-year-old primipara, at term and in active labor, was referred to the hospital on April 1, 1938, by her family physician.

The family history was essentially negative, and the patient's past history was entirely negative. Catamenia began at thirteen, were regular with a twenty-eight-day cycle and lasted four days without pain. Her last period was June 24, 1937, making her due for delivery March 31. Her pregnancy had been normal in every way.

Physical examination revealed an obese female. Her heart was not enlarged; there were no murmurs. Her lungs were clear and resonant; there were no rales. The blood pressure was 124 systolic, 84 diastolic. The fundus was three fingers below the ensiform, with vertex presenting, in ORA position and engaged. The fetal heart was heard in the right lower quadrant at the rate of 132.

Her labor was normal up to full dilatation, and the membranes ruptured eleven and a half hours after the onset of labor. Mid-forceps was done after two hours of full dilatation because of lack of progress, and an 8 pound, 8 ounce, female child was delivered in good condition. An extensive laceration on the left and the midline episiotomy were sutured with catgut. The placenta was not delivered.

There was a moderate amount of more or less continuous bleeding after the birth of the baby. An hour after the patient was delivered the pulse became rapid and of very poor quality, and then could not be felt. Her blood pressure could not be obtained. One thousand cubic centimeters of 5 per cent glucose administered intravenously resulted in improvement. A blood pressure of 70 systolic, 50 diastolic, and a pulse of poor quality with a rate of 128 were recorded. At this time

*A series of selected case histories by members of the section will be published weekly. Comments and questions by subscribers are solicited and will be discussed by members of the section.

there was no bleeding, and because of the patient's condition and the absence of hemorrhage, it was decided that the uterus should not be invaded.

During the next several hours she was given 4000 cc. of 5 per cent glucose and 800 cc. of blood. Her pulse varied from time to time; sometimes it was not palpable at the wrist, and when obtained, had a rate as rapid as 150. At the end of seven hours her condition was much improved. Her blood pressure had risen to 130 systolic, 70 diastolic, but the pulse rate was still 150. It was decided that her condition then admitted exploration of the uterus. Under light nitrous oxide and oxygen anesthesia an aseptic vaginal examination was performed. The cervix admitted two fingers but was easily dilated to admit the hand. The placenta was found to be slightly adherent for about two thirds of its area. A line of cleavage was easily obtained, and the placenta completely peeled off. The uterus was not packed. Oxytocics were given, and there was no more bleeding. The patient ran a septic temperature for ten days and was discharged on the seventeenth day. The red-blood-cell count on the tenth day was 3,150,000 and the hemoglobin 50 per cent.

Comment. Cases with a partially adherent placenta oftentimes bleed, over a continued period of time, much more than one appreciates. There is never any tremendous hemorrhage, but there is a great deal of more or less continuous bleeding until finally the patient goes into deep shock.

This patient's condition was so poor that the procrastination adopted proved to be an intelligent procedure. There was no more bleeding. The treatment for shock and the replacement of human blood improved the patient's condition so that exploration of the uterus could be done safely.

The removal of such placentas must be accomplished under the strictest asepsis. No other condition of obstetrics carries with it as great a risk of infection as does the removal of an adherent or partially adherent placenta. The sepsis in this case, fortunately not too severe, was treated purely conservatively. It is possible that intravenous injection of 2 minims of posterior pituitary extract might have resulted in the separation of this placenta, thereby doing away with the possibility of infection.

ANNUAL MEETING OF THE MASSACHUSETTS MEDICAL SOCIETY

The annual meeting of the Massachusetts Medical Society will be held at Worcester on Tuesday, Wednesday and Thursday, June 6, 7 and 8, at the Worcester Memorial Auditorium. The annual dinner will be held on Wednesday at the Hotel Bancroft.

There is to be a definite change in the program this year in that the section meetings will be held consecutively. No two meetings will be held at the same time.

A combined clinical meeting is scheduled for Wednesday morning at which four prominent speakers will be present. In the afternoon a series of round-table discussions will be open to all members of the Society.

LEGISLATIVE NOTES

Explanation of the Tabulation of the Postcard Ballot on the Osteopathic Bills and the Annual Registration Bill

The ballots were sorted according to towns and counted through March 18 morning mail. Office addresses were given in many instances. In the case of all persons who gave Boston addresses their residences were checked by reference to the latest Directory of the Massachusetts Medical Society dated February 15, 1938, and they were allocated to the town of residence rather than the town of office. Due to recent changes subsequent to the listing there may be a very few inaccuracies in this sorting, but it is believed that any errors derived from this cause would not be systematic and would not affect the results of the ballots. The Boston cards were sorted according to districts. The cards under Boston proper contain all addresses from the Back Bay, North End, South End and West End. All other districts of Boston are sorted according to the name of the district.

The tabulation giving the vote by towns on annual registration includes the affirmative, negative and blank votes on this question. No tabulation by towns was made in regard to the votes in favor of either of the osteopathic bills or the blank votes in regard to the osteopathic bills, since the sum of these items was such a very small per cent of the total vote and there was no region from which there was any appreciable number of such votes.

Table 1. *Vote on Osteopathic Bills.*

	FAVOR	OPPOSE	BLANK
H. 985	15	3149	65
H. 986	62	3095	70

Table 2. *Vote on Annual Registration.*

	FAVOR	OPPOSE	BLANK
Acton	2	2	0
Adams and North Adams	9	3	0
Agawam	0	1	0
Amesbury	2	1	1
Amherst	2	3	0
Andover	7	0	0
Arlington	12	8	0
Ashburnham	0	1	0
Ashfield	0	1	0
Ashland	0	1	0
Athol	6	2	0
Attleboro and North Attleboro	9	5	0
Auburn	0	1	0
Avon	2	0	0
Ayer	2	1	0
Barnstable	3	2	0
Barre	0	1	0
Becket	1	0	0
Bedford	2	1	0
Belchertown	2	1	0
Belmont	33	16	0
Beverly	8	4	0
Billerica	0	2	1
Boston			
Boston proper	195	89	15
Allston	4	1	0
Brighton	17	11	0
Charlestown	2	1	0

Dorchester	30	49	1
East Boston	7	4	0
Hyde Park	7	2	0
Jamaica Plain	19	20	0
Mattapan	3	3	1
Roslindale	4	10	0
Roxbury	23	25	0
South Boston	3	3	0
West Roxbury	11	11	1
Bourne	1	0	0
Boxford	1	0	0
Boylston and West Boylston	0	1	0
Braintree	4	4	1
Brewster	0	1	0
Bridgewater and State Farm	7	3	0
Brockton	28	12	0
Brookfield	2	2	0
Brookline	166	61	2
Cambridge	75	39	1
Canton	5	2	0
Carver	0	1	0
Charlton	1	0	0
Chatham	3	0	0
Chelmsford	2	1	0
Chelsea	10	17	0
Cheshire	1	0	0
Chesterfield	1	0	0
Chicopee	6	3	0
Clinton	4	6	0
Cohasset	2	0	0
Concord	5	1	0
Dalton	1	1	0
Danvers	8	3	0
Dedham	9	1	1
Deerfield	0	2	0
Dennis	2	1	0
Dover	1	0	0
Duxbury	3	0	0
Easthampton	1	1	0
Easton (North)	2	0	0
Edgartown	1	1	0
Everett	6	9	0
Fairhaven	2	0	0
Fall River	21	22	1
Falmouth	3	0	0
Fitchburg	9	13	0
Foxboro	4	1	0
Framingham	9	5	0
Franklin	3	1	0
Gardner	13	6	0
Georgetown	1	0	0
Gloucester	4	5	0
Grafton	2	4	0
Great Barrington	3	1	0
Greenfield	9	5	1
Groveland	1	1	0
Hadley and South Hadley	4	2	0
Hamilton	0	1	0
Hanover	1	1	0
Hanson	0	1	2
Harwich	2	0	0
Harwichport	0	1	0
Hatfield	1	1	0
Haverhill	9	24	1
Hingham	4	3	0
Holbrook	1	0	0
Holden	0	1	1
Holyoke	22	6	1
Hopkinton	1	1	0
Hudson	2	2	0
Hull	2	0	0
Huntington	0	1	0
Hyannis	2	1	0
Indian Orchard	1	0	0
Ipswich	3	0	0
Kingston	1	2	0
Lakeville	0	0	2
Lancaster	1	0	0
Lawrence	25	26	3
Lee	1	4	0
Leicester	2	1	0
Lenox	1	0	0
Leominster	7	4	0
Lexington	6	2	0
Lincoln	2	0	0
Littleton	2	0	0
Longmeadow	2	0	0
Lowell	54	17	1
Ludlow	2	0	0
Lunenburg	1	0	0
Lynn	35	21	1
Malden	12	23	1
Manchester	2	0	1
Mansfield	5	2	0
Marblehead	7	1	1
Marion	2	2	0
Marlboro	6	2	0
Marshfield	2	0	0
Mattapoisett	1	0	0
Maynard	1	1	0
Medfield	0	3	0
Medford	24	11	1
Medway	1	0	0
Melrose	6	20	0
Merrimac	0	1	0
Methuen	5	1	0
Middleboro	4	2	0
Middleton	1	1	0
Milford	5	3	1
Millbury	0	2	0
Millis	1	0	0
Mill River	0	1	0
Milton	22	10	0
Monson	0	2	0
Nahant	2	0	0
Nantucket	2	1	0
Natick	3	4	0
Needham	5	4	0
New Bedford	37	21	2
Newbury	1	0	0
Newburyport	5	4	0
Newton	123	47	1
Norfolk	1	0	0
Northampton	20	12	0
Northboro	2	0	0
Norwell	3	0	0
Norwood	6	4	0
Oak Bluffs	1	0	0
Orange	0	1	0
Orleans	0	1	0
Oxford	1	0	0
Palmer	1	9	0
Peabody	2	9	0
Pembroke	2	0	0
Pepperell	1	0	0
Petersham	1	0	0
Pittsfield	31	8	0
Plymouth	10	6	1
Pocasset	0	1	0
Provincetown	1	0	0
Quincy	19	18	0
Randolph	0	2	0
Reading	1	5	0
Revere	3	4	0
Rockland	2	1	0
Rockport	1	1	0
Russell	1	0	0
Rutland	0	7	1
Salem	19	9	0
Saugus	0	5	0
Scituate	5	1	0
Seekonk	0	1	0
Sharon	2	1	0
Shelburne	1	1	0
Sherborn	1	0	0
Shirley	1	0	0
Shrewsbury	3	0	0
Somerset	0	1	0
Somerville	14	23	0
Southboro	1	0	0
Southbridge	2	4	0
Southwick	0	1	0
Spencer	1	2	1
Springfield	94	36	1
Stockbridge	4	0	0
Stoneham	3	2	0
Stoughton	0	1	0
Sudbury	2	0	0
Sunderland	1	0	0
Swampscott	5	1	0
Swansea	0	1	0
Taunton	7	14	0
Templeton	0	1	0
Tewksbury	2	4	1
Topsfield	1	0	0
Turners Falls	0	3	0
Tyngsboro	0	1	0
Upton	0	1	0
Uxbridge	4	0	0
Vineyard Haven	0	1	0
Wakefield	0	13	0
Walpole	4	1	0
Waltham	22	7	0
Ware	3	2	0
Wareham	3	1	0
Warren	1	1	0
Watertown	8	8	0
Wayland	3	0	0
Webster	5	1	0
Wellesley	22	15	0
Wellfleet	0	1	0
Westboro	7	1	0
Westfield	10	3	0
Weston	2	1	0
Westwood	4	2	0
Weymouth	6	4	0
Whitinsville	2	2	0
Whitman	2	2	0
Wilbraham (North)	1	0	0
Williamsburg	2	2	0
Williamstown	1	1	0
Winchendon	1	4	0
Winchester	6	5	0
Winthrop	4	4	0
Woburn	1	8	2
Worcester	100	77	4
Wrentham	7	2	0
Yarmouth	2	1	0
Out of State	99	35	5
Total	1962	1223	63

MEDICAL POSTGRADUATE EXTENSION COURSES

The following sessions, given by the Massachusetts Medical Society in co-operation with the Massachusetts Department of Public Health, the United States Public Health Service and the Federal Children's Bureau, have been arranged for the week beginning March 27:

BARNSTABLE

Sunday, April 2, at 4:00 p. m., at the Cape Cod Hospital, Hyannis. Subject — Cesarean Section, Analgesia. Instructor: Robert L. DeNormandie. Donald E. Higgins, *Chairman*.

BERKSHIRE

Thursday, March 30, at 4:30 p. m., at the House of Mercy Hospital, Pittsfield. Subject — Syphilis: Latent syphilis — diagnosis and treatment. Instructor: Rudolph Jacoby. Melvin H. Walker, Jr., *Chairman*.

BRISTOL NORTH

Thursday, March 30, at 4:00 p. m., at the Morton Hospital, Taunton. Subject — Bleeding in the Third Trimester of Pregnancy. Instructor: Raymond S. Titus. Lester E. Butler, *Chairman*.

BRISTOL SOUTH (Fall River Section)

Tuesday, March 28, at 4:00 p. m., at the Union Hospital, Fall River. Subject — The Control and Treatment of Respiratory Infections. (This is to include the serological treatment of pneumonia in infants and children.) Instructor: Charles F. McKhann. Howard P. Sawyer, *Chairman*.

FRANKLIN

Wednesday, March 29, at 8:00 p. m., at the Franklin County Public Hospital, Greenfield. Subject — Bright's Disease and Hypertension: Evaluation of new therapy; diagnosis. Instructor: Robert S. Palmer. Halbert G. Stetson, *Chairman*.

HAMPDEN

Thursday, March 30, at 4:00 p. m., at the Academy of Medicine, Professional Building, 20 Maple Street, Springfield, and at 8:00 p. m., in the Outpatient Department of the Skinner Clinic, Holyoke Hospital, Holyoke. Subject — The Indications and Contraindications for Removal of Tonsils and Adenoids. Instructor: Louis K. Diamond. George L. Schadt, *Chairman*.

MIDDLESEX EAST

Tuesday, March 28, at 4:00 p. m., at the Melrose Hospital (Colby Hall), Melrose. Subject — Heart Disease: The treatment of "heart attacks" or "cardiovascular emergencies." Instructor: Wilfrid J. Comeau. Walter H. Flanders, *Chairman*.

MIDDLESEX NORTH

Thursday, March 30, at 4:30 p. m., at St. John's Hospital, Lowell. Subject — Anemia: Modern methods in diagnosis and treatment of blood dyscrasias. Instructor: Chester S. Keefer. William S. Lawler, *Chairman*.

MIDDLESEX SOUTH

Tuesday, March 28, at 4:30 p. m., at the Cambridge Hospital, 330 Mt. Auburn Street, Cambridge. Subject — Medical Complications in Pregnancy. Instructor: James C. Janney. Alexander A. Levi, *Chairman*.

SUFFOLK

Thursday, March 30, at 4:30 p. m., in John Ware Hall, Boston Medical Library, 8 Fenway, Boston. Subject — Gonorrhea: Modern treatment. Instructor: Oscar F. Cox, Jr. Reginald Fitz, *Chairman*.

DEATHS

MacCALLUM — WALLACE P. MACCALLUM, M.D., of 290 Common Street, Belmont, died March 9. He was in his sixty-second year.

Dr. MacCallum received his degree from Jefferson Medical College of Philadelphia in 1904. He was a former member of the Massachusetts Medical Society.

His widow, a son, a daughter and two sisters survive him.

STEVENS — EDMUND H. STEVENS, M.D., of 1911 Massachusetts Avenue, Cambridge, died March 14. He was in his ninety-fourth year.

Born at Stanstead, Province of Quebec, he received his early education in Skowhegan, Maine, where his family had moved. After his graduation from Dummer Academy he entered Harvard Medical School and received his degree in 1867.

Dr. Stevens was surgeon on the staff of the Cambridge Hospital for twenty-five years, from which position he retired in 1911 devoting his time to general practice.

He was a fellow of the Massachusetts Medical Society, the American Medical Association and the American College of Surgeons, a member of the New England Surgical Society, the Boston Obstetrical Society and the Cambridge Medical Improvement Society.

A son, Dr. Horace P. Stevens, a grandson and two granddaughters survive him.

NEW HAMPSHIRE MEDICAL SOCIETY

DEATH

WEAVER — CHARLES A. WEAVER, M.D., died in Manchester, New Hampshire, on March 6. He was born in Milford, July 2, 1855, and graduated from the University of Vermont in 1881. Dr. Weaver practiced in Manchester and New Boston for more than fifty years and was affiliated with the State Board of Health for twenty years.

His memberships included the New Hampshire Medical Society and the American Medical Association.

His widow and a sister survive him.

MISCELLANY

NOTES

Fourteen men have been granted traveling fellowships, fellowships and scholarships, totaling $12,050, by the Harvard Medical School, it was recently announced at Harvard University. These awards, for the coming academic year, are as follows: William O. Moseley, Jr., traveling fellowships to Samuel Lowis, M.D. '34, of Fitchburg, Richard B. Pippitt, M.D. '37, of Port Jervis, New York, and Paul C. Zamecnik, M.D. '36, of Cleveland, Ohio; Jeffrey Richardson Fellowship to Sinclair H. Armstrong, Jr., M.D. '37, of New York, New York; DeLamar student research fellowships to Milton Elkin, 2M, of Dorchester, Edward S. Miller, 3M, of Sioux City, Iowa, and Herbert R. Morgan, 1M, of Bell, California; John Ware Memorial Fellowship to Bernard D. Davis, 3M, of

Franklin; Charles Eliot Ware Memorial Fellowship to Henry S. Fuller, 2M, of Washington, District of Columbia; George Cheyne Shattuck Memorial Fellowship to Bernard German, 3M, of Newark, New Jersey; James Jackson Cabot Fellowship and John Foster Award to Hubert W. Smith, 2M, of Dallas, Texas; John White Browne Scholarship to Franz J. Ingelfinger, M.D. '36, of Swampscott; Dr. William Hunter Workman Scholarships to Lewis Dexter, M.D. '36, of Cambridge, and Lewis W. Kane, 4M, of Woonsocket, Rhode Island.

Dr. Otakar J. Pollak has been appointed professor of bacteriology, pathology and immunology at the Middlesex University School of Medicine. He holds the degrees of Doctor of Medicine and Doctor of Science from Masaryk University where for four years he taught pathology. In Czechoslovakia he is licensed as a specialist and a sworn court expert in the fields of bacteriology, serology, pathology, histology, hematology, biochemistry, hormone research, assimilation and electrocardiography.

Other new members of the faculty of Middlesex University School of Medicine are Dr. Francis W. Hooper, of Westwood, a graduate of Harvard College and Boston University School of Medicine, as instructor in pediatrics; Dr. George Schwartz, of 311 Commonwealth Avenue, Boston, a graduate of Tufts College Medical School and associate member of the New England Dermatological Society, as instructor of dermatology, and Dr. Hyman Shrier, of Newton, a graduate of Tufts College Medical School and a member of the New England Obstetrical and Gynecological Society, as instructor in gynecology.

The Ring Sanatorium and Hospital has announced the appointment of Dr. Curtis T. Prout as medical director to succeed Dr. Hosea W. McAdoo.

MAINE NEWS

The York County Medical Society, under the auspices of the Committee on Graduate Education, presented a most valuable and interesting panel discussion on pneumonia at a meeting held in Scarboro on January 4. The following physicians comprised the panel: chairman: Frederick T. Hill, Waterville; history and examination: T. E. Hardy, Waterville; pathology: Julius Gottlieb, Lewiston; x-ray diagnosis: Langdon T. Thaxter, Portland; cardiac complications: E. H. Drake, Portland; surgical complications: S. A. Cobb, Sanford; medical treatment: E. R. Blaisdell, Portland. This panel discussion was repeated at the meeting of the Kennebec County Medical Society in Waterville on February 16.

The regular monthly meeting of the Penobscot County Medical Association was held Tuesday, December 20, 1938. Guests of the association were Dr. W. H. Bunker, president of the Maine Medical Association, and Dr. Channing Frothingham, president of the Massachusetts Medical Society. Dr. Frothingham conducted a medical clinic at the Eastern Maine General Hospital during the afternoon.

Following dinner at the Bangor House at 7 p. m., a group of 61 interested physicians listened to the speakers of the evening. Dr. Bunker presented some of the problems which confront the Maine medical group, and his remarks elicited long and lively discussion from the floor. Dr. Frothingham chose for his subject "Economic Problems in Medicine," stressing especially the need for concerted and co-ordinated efforts by the medical profession to meet the challenge from the laity at the present time. Some proper form of insurance was advocated by the speaker.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR JANUARY, 1939

DISEASES	JAN. 1939	JAN. 1938	FIVE-YEAR AVERAGE*
Anterior poliomyelitis	1	0	1
Chickenpox	1433	2196	1882
Diphtheria	22	17	39
Dog bite	509	625	520
Dysentery, bacillary	20	6	2
German measles	66	57	247
Gonorrhea	380	376	487
Lobar pneumonia	619	531	757
Measles	1986	566	2708
Meningococcus meningitis	5	3	9
Mumps	771	617	878
Paratyphoid B fever	0	1	0
Scarlet fever	797	1162	1051
Syphilis	400	433	434
Tuberculosis, pulmonary	292	267	288
Tuberculosis, other forms	20	38	35
Typhoid fever	8	6	5
Undulant fever	8	2	3
Whooping cough	951	598	1144

*Based on figures for preceding five years.

RARE DISEASES

Anterior poliomyelitis was reported from: Lynn, 1; total, 1.

Anthrax was reported from: Ludlow, 1; total, 1.

Diphtheria was reported from: Beverly, 1; Boston, 2; Cambridge, 1; Foxboro, 1; Lawrence, 11; Lynn, 1; Methuen, 1; Peabody, 1; Woburn, 1; Worcester, 2; total, 22.

Dysentery, bacillary, was reported from: Danvers, 12; Fall River, 1; Foxboro, 1; Holyoke, 1; Wellesley, 2; Wrentham, 3; total, 20.

Infectious encephalitis was reported from: Foxboro, 1; Springfield, 1; total, 2.

Malaria was reported from: Springfield, 1; total, 1.

Meningococcus meningitis was reported from: Arlington, 1; Belmont, 1; Cambridge, 1; Lexington, 1; West Auburn, 1; total, 5.

Pfeiffer bacillus meningitis was reported from: Attleboro, 1; Brockton, 2; Salem, 1; total, 4.

Septic sore throat was reported from: Beverly, 1; Boston, 3; Falmouth, 1; Fall River, 1; Gardner, 2; Lawrence, 3; total, 11.

Tetanus was reported from: Fall River, 1; total, 1.

Trachoma was reported from: Cambridge, 1; Lawrence, 1; Malden, 1; total, 3.

Trichinosis was reported from: Medford, 3; total, 3.

Typhoid fever was reported from; Acushnet, 1; Boston, 1; Greenfield, 1; Longmeadow, 1; Ludlow, 1; Milford, 1; Somerville, 1; Watertown, 1; total, 8.

Undulant fever was reported from: Gardner, 1; Grafton, 1; Leominster, 1; Leverett, 1; Salem, 1; Sharon, 1; Townsend, 1; West Springfield, 1; total, 8.

Anterior poliomyelitis continued to show low incidence.

Measles, German measles, scarlet fever, chickenpox and diphtheria were reported below the five-year average.

Pulmonary tuberculosis was reported at a record low figure for the second consecutive month.

Lobar pneumonia, whooping cough, mumps and meningococcus meningitis were reported below the five-year average.

Tuberculosis (other forms) showed record low figures.

Undulant fever was reported at a record high figure.

Typhoid fever was reported above the five-year average.

Animal rabies showed record low incidence for the second consecutive month. Cases were reported from Bedford, Marblehead, and Wayland.

CORRESPONDENCE

REGULATIONS RELATIVE TO TRANSFUSIONS

To the Editor: At the last meeting of the Department of Public Health, on Tuesday, January 10, regulations were adopted relative to the use of blood or other tissues for purposes of transfusions, and so forth. These regulations were published in the *New England Journal of Medicine* (*220:* 171, 1939). They were to become effective ninety days from date of passage. The date upon which they were to become effective was thus advanced in order that those who found the regulations to be unreasonable might call the fact to the Department's attention.

So many entirely reasonable requests for amendment have been received that the Department, at its meeting on March 14, voted to revoke the previously adopted regulations and to substitute the following therefor. These new regulations become effective on April 10.

PAUL J. JAKMAUH, M.D.,
Commissioner of Public Health.

State House,
Boston.

* * *

REGULATIONS RELATIVE TO THE USE OF BLOOD OR OTHER TISSUES FOR PURPOSES OF TRANSFUSION, ETC.

(Under the provisions of the General Laws, Chapter 111, Section 6.)

INTERPRETATION AND DEFINITION OF WORDS AND TERMS

1. Donor: Any person whose blood, unsterilized fraction of blood or tissue, is introduced into the body of another person by transfusion or otherwise.
2. Recipient: Any person into whose body the blood, unsterilized fraction of blood or tissue of another person is introduced by transfusion or otherwise.
3. Dangerous disease: Any disease which has been declared by the Department of Public Health to be dangerous to the public health and which is transmissible by the introduction of the blood, unsterilized fraction of blood or tissue of the donor, into the body of the recipient.
4. Withdrawal of blood or tissue: The withdrawal of blood or tissue from the body of the donor, whether for immediate introduction into the body of the recipient, or for deferred introduction as, for example, of banked blood or serum.
5. Blood test: A blood test for syphilis.

EXAMINATION OF DONOR

No person shall introduce the blood, or any unsterilized fraction of the blood or tissue, of any donor into the body of any recipient unless said donor has never had syphilis or malaria and is free from any dangerous disease, so far as such freedom from past and present infection can be determined by the following examinations and tests:

1. A carefully taken history as to past or present infection with syphilis or malaria, as to possible exposure to syphilis within the preceding two months, and as to the presence of symptoms of infection with any dangerous disease; and a careful physical examination which shall consist at least of an inspection of the skin from head to feet for any rash or eruption, of the mouth for enanthem, of the external genitalia for any lesion or scar, and the recording of the body temperature; said history to be taken and said examination to be made, by a registered physician, immediately before the withdrawal of blood or tissue.
2. A blood test within thirty days prior to withdrawal of blood or tissue; provided that, in the case of emergency, if no previously blood-tested donor is available and a rapid blood test cannot be made, said test may be omitted, but such omission and the reason therefor shall be made known to the recipient if possible, or to the recipient's guardian or nearest relative if available.
3. If the blood test hereinbefore required was made more than five days prior to the withdrawal of blood or tissue, or omitted because of emergency, a specimen of blood shall be collected at the time of withdrawal of blood or tissue, for subsequent testing for syphilis.
4. Exceptions:

   If both donor and recipient are suffering from the same disease, the infection of said donor with that disease shall not prohibit the use of said donor's blood or fraction of blood or tissue for introduction into the body of the recipient.

   Nothing in these regulations shall prohibit the therapeutic use of malaria.

EXAMINATION OF RECIPIENT

It shall be determined by a registered physician, before introduction of the blood, unsterilized fraction of blood or tissue, of a donor into the body of the recipient, whether or not said recipient has syphilis or any other dangerous disease, so far as it can be determined by a carefully taken history, a careful physical examination, and a blood test, except that in the case of emergency if a blood test cannot be performed, a specimen of blood shall be collected before the introduction of blood or tissue, for subsequent test for syphilis.

THE KEEPING OF RECORDS

The name, age, sex, color, marital status and address of both donor and recipient, the type of blood test performed on the donor, the results of the tests and examinations herein required, by whom performed, the date of withdrawal of blood or tissue and of its introduction into the body of the recipient, the name of the physician who introduced it, the omission of any blood test herein required and the reason therefor, shall be entered in the permanent records of the hospital, institution, clinic or physician under whose jurisdiction the introduction of blood or tissue was performed, and in such a manner that all the said data may be readily located by reference to the recipient's medical record.

PNEUMOCOCCUS-TYPING AND SERUM-DISTRIBUTION SERVICE

To the Editor: The accompanying list of laboratories for pneumococcus typing and serum distribution has been revised and includes all recent changes in their status. Two columns have been added to the form used in previous lists, one to show which types each laboratory is equipped to identify and the other to note from whom each laboratory usually accepts specimens.

TYPE 14 THERAPEUTIC SERUM

Attention is called to the fact that the Department is now distributing serum for the treatment of pneumonias due to Type 14 in addition to those previously available without charge (Types 1, 2, 5, 7, and 8). This last addition is a rabbit serum and is not made by the Department's Antitoxin and Vaccine Laboratory but is purchased from a commercial manufacturer. Except when there is an unusual prevalence in a particular area of the State, this serum will be available only through the five laboratories noted on the accompanying list. The basic dose for infants is 40,000 units and for adults 100,000 units.

There is a considerable amount of evidence, much of which is unpublished, that serum treatment of Type 14 pneumonias will reduce both the fatality rate and the duration of illness. Pneumonia due to this type is most frequently encountered in infants and young children but is occasionally found in adults. Bullowa and Gleich[1] report that Type 14 was the etiologic agent in 218 cases (5.7 per cent) from a series of 2816 cases of pneumococcic pneumonia. When the 2816 cases were analyzed by age it was found that Type 14 was responsible for 20 per cent of all pneumococcic pneumonias in infants under two years of age, 14 per cent among children two to twelve years, and 3 per cent among adults. Among those in their series not treated by serum Type 14 pneumonia was most serious in adults (32 per cent fatal), quite serious in infants under two years (16.1 per cent fatal) and least serious in children two to twelve years (9.8 per cent fatal). In Heffron's series of 185 collected cases due to this type not treated with serum (quoted by Plummer[2]) there were 66 deaths, a fatality rate of 35.7 per cent.

COMPONENTS OF POOLS OF DIAGNOSTIC SERUM

All laboratories are not prepared to identify pneumococci through Type 32 and some of them (when Types 1, 2, 3, 5, 7, 8, or 14 are not present) will be reporting a pneumococcus belonging to a particular group. The types included in each of the pools of diagnostic serum are given here for reference:

Mixture A — Types 1, 2, and 7
B — " 3, 4, 5, 6, and 8
C — " 9, 12, 14, 15, and 17
D — " 10, 11, 13, 20, 22, and 24
E — " 16, 18, 19, 21, and 28
F — " 23, 25, 27, 29, 31, and 32.

The pneumococci which cannot be identified completely by local laboratories are usually sent on to the State Bacteriological Laboratory for typing. However, if the physician plans to purchase commercial serum to treat a case, in order to save valuable time the sputum should be sent to the nearest local laboratory which is prepared to identify all types.

PAUL J. JAKMAUH, M.D.,
Commissioner of Public Health.

State House,
Boston.

REFERENCES

1. Bullowa, J. G. M., and Gleich, M.: A comparison of the etiology, death rates and bacteremic incidence in the more frequent primary pneumonias of infants, children and adults. Am. J. M. Sc. 196:709-715, 1938.
2. Plummer, N.: The use of serum in the treatment of the higher types of pneumonia. J. A. M. A. 111:694-699, 1938.

LABORATORIES FOR PNEUMOCOCCUS TYPING AND SERUM DISTRIBUTION

CITY OR TOWN	HOSPITAL OR OTHER AGENCY	SPECIMENS TYPED FOR TYPES 1, 2, 3, 5, 7, 8 AND 14 (PLUS POOLS A–F) EXCEPT AS INDICATED	TYPE OF THERAPEUTIC SERUM FOR DISTRIBUTION	SPECIMENS ACCEPTED FROM†:
Amesbury	Amesbury Hospital		*	S
Attleboro	Sturdy Memorial Hospital	1–32	1	S
Ayer	Community Memorial Hospital		1	A
Beverly	Beverly Hospital	1–32	1, 2, 5, 7, 8	A
Boston	Antitoxin and Vaccine Laboratory	No typing	1, 2, 5, 7, 8	No typing
Boston	Beth Israel Hospital		1	A
Boston	Boston City Hospital	1–32	1, 2, 5, 7, 8	A
Boston	Carney Hospital		1	H
Boston	Children's Hospital	1–32	*	S
Boston	Faulkner Hospital	1–32	1, 2, 5, 7, 8	A
Boston	Massachusetts General Hospital	1–32	1	S
Boston	Massachusetts Memorial Hospitals		1	A
Boston	New England Deaconess Hospital		1	A
Boston	New England Hospital for Women and Children		*	S
Boston	Peter Bent Brigham Hospital	1–32	1, 2, 5, 7, 8	H
Boston	State Bacteriological Laboratory	1–32	1, 2, 5, 7, 8, 14	A
Boston	St. Elizabeth's Hospital		1	A
Brockton	Board of Health Laboratory	1–32	*	A
Brockton	Brockton Hospital	1–32	1, 2, 5, 7, 8	A
Cambridge	Board of Health Laboratory		*	M
Cambridge	Cambridge City Hospital		1	M
Cambridge	Cambridge Hospital	1–32	1	A
Chelsea	Chelsea Memorial Hospital		1	S
Clinton	Clinton Hospital		1	A

*Therapeutic serum is not available through this laboratory.
†Key to abbreviations. A = any physician; H = hospital cases only; M = any physician in municipality; S = staff members and hospital cases only.

Everett	Whidden Memorial Hospital	1–32	1	A
Fall River	Fall River General Hospital		1	A
Fall River	St. Ann's Hospital		1	A
Fall River	Truesdale Hospital	1–32	1	A
Fall River	Union Hospital	1–32	1	A
Fitchburg	Burbank Hospital	1–32	1, 2, 5, 7, 8	A
Foxboro	Foxboro State Hospital		*	H
Framingham	Framingham Union Hospital	1–32	1, 2, 5, 7, 8	A
Gardner	Henry Heywood Memorial Hospital		1	A
Gloucester	Addison Gilbert Hospital	1–32	1	S
Great Barrington	Fairview Hospital		1	A
Greenfield	Franklin County Hospital	1–32	1, 2, 5, 7, 8	A
Haverhill	Hale Hospital	1–32	1, 2, 5, 7, 8, 14	A
Holyoke	Holyoke Hospital	1–32	1	S
Holyoke	Providence Hospital	1–32	1, 2, 5, 7, 8, 14	A
Hyannis	Cape Cod Hospital	1–32	1, 2, 5, 7, 8	A
Ipswich	Cable Memorial Hospital	1–32	*	A
Lawrence	Lawrence General Hospital	1–32	1	A
Leominster	Leominster Hospital		1	M
Lowell	Lowell General Hospital		1	A
Lowell	St. John's Hospital	1–32	1	A
Lowell	St. Joseph's Hospital	1–32	1, 2, 5, 7, 8	A
Lynn	Lynn Hospital	1–32	1, 2, 5, 7, 8	A
Lynn	Union Hospital		1	A
Malden	Malden Hospital	1–32	1	A
Marlborough	Marlborough Hospital		1	S
Melrose	Melrose Hospital		*	A
Middleborough	St. Luke's Hospital		1	A
Milford	Milford Hospital		1	S
Nantucket	Nantucket Cottage Hospital	1–32	1	A
Natick	Leonard Morse Hospital		1	S
New Bedford	St. Luke's Hospital	1–32	1, 2, 5, 7, 8, 14	A
Newburyport	Anna Jaques Hospital		1	S
Newton	Newton Hospital	1–32	1	A
Norfolk	Pondville State Hospital	1–32	1, 2, 5, 7, 8	A
North Adams	North Adams Hospital		1	A
Northampton	Cooley Dickinson Hospital	1–32	1	A
Northampton	Northampton State Hospital		*	H
Norwood	Norwood Hospital		1	A
Oak Bluffs	Martha's Vineyard Hospital		1	A
Palmer	Wing Memorial Hospital		1	A
Peabody	J. B. Thomas Hospital		1	A
Pittsfield	House of Mercy Hospital	1–32	1, 2, 5, 7, 8	A
Pittsfield	St. Luke's Hospital		1	A
Plymouth	Jordan Hospital		1	A
Pocasset	Barnstable County Sanatorium		1	A
Quincy	Quincy City Hospital	1–32	1, 2, 5, 7, 8	A
Salem	Salem Hospital	1–32	1	A
Somerville	Somerville Hospital		1	A
Southbridge	Harrington Memorial Hospital		1	A
Springfield	Mercy Hospital	1–32	1, 2, 5, 7, 8	A
Springfield	Springfield Hospital	1–32	1	A
Springfield	Wesson Memorial Hospital		1	A
Taunton	Morton Hospital	1–32	1	A
Waltham	Metropolitan State Hospital		*	H
Waltham	Waltham Hospital	1–32	1	A
Ware	Mary Lane Hospital		1	A
Webster	Webster District Hospital		1	A
Westfield	Noble Hospital	1–32	1	A
Weymouth	Weymouth Hospital		*	A
Winthrop	Winthrop Community Hospital	1–32	*	A
Worcester	St. Vincent Hospital		1	A
Worcester	Worcester City Hospital	1–32	1, 2, 5, 7, 8, 14	A
Worcester	Worcester Hahnemann Hospital		1	A
Worcester	Worcester Memorial Hospital	1–32	1	A
Worcester	Worcester State Hospital	1–32	1	H

*Therapeutic serum is not available through this laboratory.

†Key to abbreviations. A = any physician; H = hospital cases only; M = any physician in municipality; S = staff members and hospital cases only.

Additions to and changes in this list are made from time to time. Due to the high cost of the serum the number of distributing stations is kept as low as possible. At present Type-I serum is easily available in all parts of the State and serums for certain higher types are available at strategic points throughout the State. The distribution of pneumococcus-antibody solutions is restricted to those hospitals, institutions or agencies equipped to do pneumococcus typing and employing bacteriologists or laboratory technicians who have been approved by the Department of Public Health as to their familiarity with typing procedures.

NOTICES

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held on Tuesday, March 28, in the Peter Bent Brigham Hospital amphitheater (Shattuck Street entrance), at 8:15 p. m.

PROGRAM

Presentation of cases.

Primary Tumors of the Lung. Dr. Edward D. Churchill.

Medical students and physicians are cordially invited to attend.

ROBERT ZOLLINGER, M.D., *Secretary.*

COMBINED MEETING OF THE SUFFOLK DISTRICT MEDICAL SOCIETY AND NEW ENGLAND PEDIATRIC SOCIETY

There will be a combined meeting of the Suffolk District Medical Society and the New England Pediatric Society on Wednesday, March 29, at 8:15 p. m., at the Boston Medical Library, 8 Fenway, Boston.

Dr. Albert D. Kaiser, of Rochester, New York, will speak on "Significant Facts in the Tonsil Problem in Children." Dr. Francis L. Weille will open the discussion.

JOHN P. MONKS, M.D., *Secretary,*
Suffolk District Medical Society.

JAMES M. BATY, M.D., *Secretary,*
New England Pediatric Society.

FIRST ANNUAL REGIONAL CONVENTION OF THE ASSOCIATION OF MEDICAL STUDENTS

The first annual regional convention of the Association of Medical Students will be held at the Harvard Medical School, April 1, 2 and 3. "Distribution of Medical Care" has been selected as the general subject of the convention.

The speakers will include Dr. Douglass V. Brown, Mr. George St. J. Perrott and Dr. Elliott P. Joslin, of Boston, Dr. Hugh Cabot, of Rochester, Minnesota, and Dr. John P. Peters, of the Yale University School of Medicine. Dr. Richard H. Overholt will present a colored motion picture entitled "Thoracic Surgery."

Clinics have been scheduled for Monday, April 3, at the Boston City and the Joseph H. Pratt Diagnostic hospitals.

LAWRENCE CANCER CLINIC

The regular Lawrence Cancer Clinic, to be held at the Lawrence General Hospital, 1 Garden Street, Lawrence, on Tuesday, April 4, at 10:00 a. m., will be a demonstration and teaching clinic for physicians, with Dr. Channing C. Simmons, of Boston, associate in surgery in the courses for graduates at Harvard Medical School, surgeon-in-chief to Collis P. Huntington Memorial Hospital, member of the Cancer Commission of Harvard University, and consulting surgeon to the Massachusetts General Hospital, present as consultant. Physicians of the north half of Essex County are invited to accompany any of their patients whom they desire to have this service or to send them with a note. A report will be returned to every physician who sends a patient. The service is gratis. Any physician is welcome to attend the clinic.

This clinic is endorsed by the Committee on Postgraduate Instruction of the Massachusetts Medical Society.

ROY V. BAKETEL, M.D.,
CHARLES J. BURGESS, M.D.,
JOHN J. MCARDLE, M.D.,
HARRY H. NEVERS, M.D.,
THOMAS V. UNIAC, M.D.,
J. FORREST BURNHAM, M.D., *Chairman.*

CONSULTATION CLINICS FOR CRIPPLED CHILDREN IN MASSACHUSETTS, UNDER THE PROVISIONS OF THE SOCIAL SECURITY ACT

CLINIC	DATE	ORTHOPEDIC CONSULTANT
Salem	April 3	Harold C. Bean
Haverhill	April 5	Arthur T. Legg
Lowell	April 7	Albert H. Brewster
Gardner	April 11	Mark H. Rogers
Springfield	April 12	Garry deN. Hough, Jr.
Brockton	April 13	George W. Van Gorder
Pittsfield	April 17	Francis A. Slowick
Worcester	April 21	John W. O'Meara
Fall River	April 24	Eugene A. McCarthy
Hyannis	April 25	Paul L. Norton

MASSACHUSETTS PSYCHIATRIC SOCIETY

The next meeting of the Massachusetts Psychiatric Society will be held at the Boston Psychopathic Hospital on Friday, March 24, at 8:00 p. m.

PROGRAM

Localization of Cortical Lesions by Electroencephalography. Dr. Hallowell Davis.

The Cortical Frequency Spectrum in Epilepsy. Dr. Fred A. Gibbs.

Some Clinical Uses of the Delta Index with Special Reference to Schizophrenia. Dr. Hudson Hoagland.

Electroencephalography in a Mental Hospital. Miss Pauline A. Davis.

General discussion will follow.

W. FRANKLIN WOOD, M.D., *Secretary.*

HOSPITAL RESEARCH COUNCIL

The next meeting of the Hospital Research Council will be held in the Ether Dome of the Massachusetts General Hospital on Tuesday, March 28, at 5:00 p. m.

PROGRAM

Vitamin C Lack After Major Surgery. Dr. Chester M. Jones.

The Determination of Serum Proteins. Dr. Bernard M. Jacobson.

The Evidence for Endocrine Control of Serum Amylase Activity. Dr. Oliver Cope.

Response of Myxedema to Iodinated Proteins. Dr. Jacob Lerman.

HENRY K. BEECHER, M.D., *Secretary.*

AMERICAN HEART ASSOCIATION

The Fourteenth Scientific Sessions of the American Heart Association will be held at the Hotel Jefferson, St. Louis, Missouri, on Friday and Saturday, May 12 and May 13.

The general cardiac program will be given on Friday, and the program of the section for the study of the peripheral circulation, on Saturday.

AMERICAN BOARD OF INTERNAL MEDICINE, INC.

Written examinations for certification by the American Board of Internal Medicine will be held in various sections of the United States on the third Monday in October and the third Monday in February.

Formal application must be received by the secretary before August 20 for the October 16 examination, and on or before January 1 for the February 19, 1940 examination.

Application forms may be obtained from Dr. William S. Middleton, secretary-treasurer, 1301 University Avenue, Madison, Wisconsin.

MEDICAL CLINIC AT THE PETER BENT BRIGHAM HOSPITAL

At 3:30 p.m. on Thursday, March 30, in the amphitheater of the Peter Bent Brigham Hospital, Dr. James P. O'Hare will give a medical clinic. Practitioners and medical students are cordially invited to attend.

NEW ENGLAND HEALTH EDUCATION INSTITUTE

The New England Health Education Institute, sponsored by the New England Health Education Association, the State Departments of Health, the State Departments of Education and the State Tuberculosis Associations of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, will be held at the Massachusetts Institute of Technology, William Barton Rogers Building, 77 Massachusetts Avenue, Cambridge, Massachusetts, on April 21 and 22.

UNITED STATES CIVIL SERVICE EXAMINATIONS

Associate Public Health Nursing Consultant, $3,200 a Year
Assistant Public Health Nursing Consultant, $2,600 a Year

Applications must be on file with the United States Civil Service Commission at Washington, District of Columbia, not later than April 10.

Candidates must have successfully completed a full four-year course leading to a bachelor's degree in a college or university of recognized standing, including or supplemented by at least eighteen hours in public health nursing. They must have graduated subsequently to January 1, 1918, from an accredited school of nursing affiliated with a hospital having a daily average of fifty or more bed patients and they must be registered graduate nurses in a state or territory of the United States or in the District of Columbia.

Associate Medical Officer, $3,200 a Year

Applications must be on file with the United States Civil Service Commission at Washington, District of Columbia, not later than April 10.

Candidates must have graduated from a medical school of recognized standing with the degree of M.D., subsequent to May 1, 1934. They must have had at least one year internship, general, or one year in a special branch. Applications will be received from persons who are now serving one-year internships. They will not be certified for employment, however, until proof of satisfactory completion of one-year internship is furnished to the Commission.

WORCESTER DISTRICT MEDICAL SOCIETY

The next meeting of the Worcester District Medical Society will be held at the Worcester Hahnemann Hospital on Wednesday, April 12.

Dr. Meredith F. Campbell, professor of urology at New York University College of Medicine, will speak on "Urogenital Diseases of Infants and Children." Discussion will be opened by Drs. E. Granville Crabtree and Bancroft C. Wheeler.

GEORGE C. TULLY, M.D., *Secretary.*

BOSTON DISPENSARY

A luncheon meeting of the clinical staff of the Boston Dispensary will be held on Friday, March 31, in the auditorium of the Joseph H. Pratt Diagnostic Hospital at 12 o'clock noon.

PROGRAM

The Pathology of Sinusitis. Dr. Philip E. Meltzer.

The Treatment of Sinusitis. Dr. Lyman G. Richards.

All interested in the subject are cordially invited to attend.

ROBERT W. BUCK, M.D., *President,*
JAMES M. BATY, M.D., *Secretary.*

TUFTS COLLEGE MEDICAL SCHOOL ALUMNI ASSOCIATION

The annual meeting and dinner of the Tufts College Medical School Alumni Association will be held Wednesday evening, March 29, at the Hotel Somerset, Boston.

Changes in the medical school and progress of the medical school campaign will be discussed by President Leonard Carmichael.

ALONZO K. PAINE, M.D., *President.*

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, MARCH 27

MONDAY, MARCH 27

*8:15 p. m. New England Heart Association. Beth Israel Hospital.

TUESDAY, MARCH 28

*9-10 a. m. Joseph H. Pratt Diagnostic Hospital. X-ray Demonstration. Dr. Alice Ettinger.

*10 a. m. - 12:30 p. m. Tumor clinic. Boston Dispensary.

5 p. m. Hospital Research Council. Ether Dome, Massachusetts General Hospital.

*8:15 p. m. Harvard Medical Society. Peter Bent Brigham Hospital amphitheater (Shattuck Street entrance).

WEDNESDAY, MARCH 29

*9-10 a. m. Joseph H. Pratt Diagnostic Hospital. Hospital case presentation. Dr. S. J. Thannhauser.

*12 m. Clinicopathological conference. Children's Hospital amphitheater.

Evening. Tufts College Medical School Alumni Association. Hotel Somerset, Boston.

THURSDAY, MARCH 30

8:30-9:30 a. m. Exchange visit, Surgical and Orthopedic Staffs of the Peter Bent Brigham and Children's hospitals, held this week at the Peter Bent Brigham Hospital.

*9-10 a. m. Joseph H. Pratt Diagnostic Hospital. Recent Concepts in the Etiology of Migraine. Dr. Arnold Zetlin.

*3:30 p. m. Medical clinic at the Peter Bent Brigham Hospital.

FRIDAY, MARCH 31

*9-10 a. m. Joseph H. Pratt Diagnostic Hospital. Clinical Studies and Biochemistry of Virulism. Dr. H. B. Friedgood.

*10 a. m. - 12:30 p. m. Tumor clinic. Boston Dispensary.

*12 m. Boston Dispensary, luncheon meeting of the clinical staff.

12 m. Clinical meeting of the Children's Medical Service. Massachusetts General Hospital. Ether Dome.

SATURDAY, APRIL 1

*10 a. m. - 12 m. Staff rounds of the Peter Bent Brigham Hospital. Conducted by Dr. Henry A. Christian.

*Open to the medical profession.

MARCH 24 — Massachusetts Psychiatric Society. Page 541.

MARCH 26 — Lecture at the Faulkner Hospital. Page 971, issue of December 15.

MARCH 26 — Health Lecture — Quincy City Hospital. Page 363, issue of February 23.

MARCH 27 — New England Heart Association. Page 493, issue of March 16.

MARCH 27-31 — American College of Physicians. Page 36, issue of July 7.

MARCH 28 — Hospital Research Council. Page 541.

MARCH 28 — Harvard Medical Society. Page 541.

MARCH 29 — Combined meeting of the New England Pediatric Society and the Suffolk District Medical Society. Page 541.

MARCH 29 — Tufts College Medical School Alumni Association. Page 542.

MARCH 30 — Medical clinic, Peter Bent Brigham Hospital. Page 542.

MARCH 31 — Boston Dispensary, luncheon meeting of the clinical staff. Page 542.

APRIL 1, 2 and 3 — First Annual Regional Convention of the Association of Medical Students. Page 541.

APRIL 4 — Lawrence Cancer Clinic. Page 541.

APRIL 13 — Pentucket Association of Physicians, 8:30 p. m., Hotel Bartlett, 95 Main Street, Haverhill.

APRIL 21 and 22 — New England Health Education Institute. Page 542.

MAY 7-15 — International Congress of Military Medicine and Pharmacy. Page 501, issue of September 29.

MAY 12 and 13 — American Heart Association. Page 542.

MAY 13-16 — American Board of Obstetrics and Gynecology. Page 457, issue of March 9.

MAY 14-20 — American Physicians' Art Association. Page 404, issue of March 2.

MAY 15-19 — American Medical Association. St. Louis, Missouri.

MAY 22, 23, and 24 — American Association for the Study of Goiter. Page 405, issue of March 2.

JUNE 6, 7, 8 — Massachusetts Medical Society. Worcester.

JUNE 12-17 — Symposium on the Public-Health Significance of the Virus and Rickettsial Diseases. Page 125, issue of January 19.

JUNE 26-29 — National Tuberculosis Association. Page 936, issue of December 8.

SEPTEMBER — Boston Psychoanalytic Institute. Page 450, issue of September 22.

SEPTEMBER 11-15 — American Congress on Obstetrics and Gynecology. Page 938, issue of December 8.

SEPTEMBER 15-28 — Pan-Pacific Surgical Association. Page 863, issue of November 24.

FALL, 1939 — Temperature Symposium. Page 218, issue of February 2.

District Medical Societies

ESSEX SOUTH

APRIL 5 — Addison Gilbert Hospital, Gloucester. Clinic at 5 p. m. Dinner at 7 p. m. Speaker: Dr. Ethan Allan Brown. Subject: Allergy.

MAY 10 — Annual meeting. Salem Country Club, Peabody.

NORFOLK DISTRICT

MARCH 28 — Page 493, issue of March 16.

SUFFOLK

MARCH 29 — Joint meeting with New England Pediatric Society. Page 541.

APRIL 26 — Annual meeting in conjunction with Boston Medical Library, at 8:15 p. m. Election of officers. Program and speakers to be announced.

WORCESTER

APRIL 12 — Page 542.

MAY 10 — Worcester Country Club — annual meeting.

BOOKS RECEIVED FOR REVIEW

Anemia in Practice: Pernicious anemia. William P. Murphy. 344 pp. Philadelphia and London: W. B. Saunders Co., 1939. $5.00.

Pulmonary Tuberculosis: A synopsis. Jacob Segal. 150 pp. New York, London, Toronto: Oxford University Press, 1939. $2.75.

Bacteria: The smallest of living organisms. Ferdinand Cohn (1872). Translated by Charles S. Dolley (1881). 44 pp. Baltimore: The Johns Hopkins Press, 1939. $1.00.

Life's Beginning on the Earth. R. Beutner. 222 pp. Baltimore: The Williams & Wilkins Co., 1938. $3.00.

The New International Clinics. Original contributions: clinics; and evaluated reviews of current advances in the medical arts. Edited by George M. Piersol. Vol. 1, n. s. 2. 312 pp. Philadelphia, Montreal and New York: J. B. Lippincott Co., 1939. $3.00.

Transactions of the American Gynecological Society. Edited by Richard W. TeLinde. Volume 63. For the year 1938. 296 pp. St. Louis: The C. V. Mosby Co., 1939.

A Treatise on the Surgical Technique of Otorhinolaryngology. Georges Portmann. Collaborators: H. Retrouvey, J. Despons, P. Leduc and G. Martinaud. Translation by Pierre Viole. 675 pp. Baltimore: William Wood & Co., 1939. $12.50.

Problems of Ageing: Biological and medical aspects. Edited by E. V. Cowdry. 758 pp. Baltimore: Williams & Wilkins Co., 1939. $10.00.

Biochemistry for Medical Students. William V. Thorpe. 475 pp. Baltimore: William Wood & Co., 1939. $4.50.

Chemical Analysis for Medical Students: Qualitative and volumetric. R. E. Illingworth. 151 pp. Baltimore: William Wood & Co., 1938. $1.50.

BOOK REVIEWS

Marihuana: America's New Drug Problem: A sociologic question with its basic explanation dependent on biologic and medical principles. Robert P. Walton. 223 pp. Philadelphia, London, Montreal, Chicago and New York: J. B. Lippincott Co., 1938. $3.00.

Hemp — the plant and its derivatives have passed under different names according to time and place — has long been abused as a narcotic, particularly in the Orient. It is only within the past half decade, however, that its use has become a widespread menace in these United States, a menace the greater in that the drug has been employed chiefly by those hardly beyond childhood. Enough concerning marihuana has appeared in the press and in popular periodicals to excite people's fears, but it has remained for Dr. Walton to attempt a critical survey of all our available knowledge, a task that has involved a combing of popular as well as scientific literature.

The result is a work which is both timely and scientific and which furnishes information that should be of material aid in efforts to discover a solution of the problem. Parents of adolescents, educators, social-service workers, agents of the law and, of course, physicians, should all find in this book matters of interest and import. For those who would pursue further particular phases of the subject there are excellent bibliographies.

Clinical Laboratory Methods and Diagnosis: A textbook on laboratory procedures with their interpretation. R. B. H. Gradwohl. Second edition. 1607 pp. St. Louis: The C. V. Mosby Co., 1938. $12.50.

To the above description of this book one might add that it has 492 illustrations in the text, 44 colored plates and weighs 8 pounds and 4 ounces. In the preface to the edition the author states: "Of particular moment in the improvement of this book are the following: a description of the newer concepts on nephritis and nephrosis, according to the viewpoints of Fishberg, Smith, Berglund and others; amplification and simplification of the chapter on blood chemistry, with an adoption of standard modern methods and the elimination of methods no longer generally practiced. More than one hundred pages have been added to the chapter on hematology. Complete data on the theories of blood development are given. New technical measures have been set forth. The value and technical methods of blood sedimentation tests are fully described. The Schilling theory has been further elaborated. Aside from textual improvement, twenty-four full-page color plates have been added — a veritable atlas of hematology."

As an uncritical assembly of unrelated topics, this book has no equal. Why any book on clinical laboratory methods should contain approximately 200 pages suitable to a textbook of bacteriology, 90 pages on postmortem examinations, tissue cutting and staining and the preparation of museum specimens, 50 pages on toxicological technic, 42 pages on the detection of crime by laboratory methods, and almost 200 pages on parasitology and tropical medicine, the reviewer is unable to state. Each of these subjects would appear to deserve a separate textbook. The section devoted to postmortem pathology and toxicological technic is inadequate. The detection of crime by laboratory methods has no connection with clinical laboratory methods. Parasitology, as treated in this volume, is more properly a division of protozoology. This last section contains extremely good photographic reproductions, but many are repetitious. In fact, the only portion of the book which is not illustrated is the index. There are a dozen or more illustrations of microscopes, innumerable pictures of common laboratory apparatus, such as a shaking machine for the manufacture of vaccines, an electric warm stage, a bottle for the collection of feces, bunsen burners, electric incubators, coverglass holders, and so forth. Why any author of a textbook of laboratory methods has to assume that the users of his book have never before seen the inside of a laboratory is beyond comprehension.

If all the repetitions, useless illustrations and nonpertinent subject matter could be eliminated and this book reduced to about one fourth its present size, it might prove to be a convenient reference for the clinician and laboratory worker.

Tuberculosis Among Young Women. Edna E. Nicholson. 67 pp. New York: National Tuberculosis Association, 1938.

This important problem has finally been taken out from the realms of conjecture, guesswork and moralization, and put on a sound scientific basis. The subject of the high rate of tuberculosis mortality among adolescent young women has been a favorite topic of the self-styled medical expounders and moral preachers, who found many figures in support of their pet theories as to why such a condition exists.

This study was approached in a very thorough and scientific manner by Miss Edna E. Nicholson, and the material was first published by the National Tuberculosis Association as their Social Research Series (Nos. 1 and 4). After studying the various factors that have been enunciated as a possible cause of the increased mortality, Miss Nicholson concludes, although her ideas do not lend themselves to absolute proof, that the increased mortality rate is due to the psychic and physiologic changes that take place among young women in the adolescent age. In other words, the cause is biologic and not necessarily environmental — although environment does play a part. The deduction appears to be quite sound, as the mortality in this group has always been high.

This survey should be of very great interest to all physicians who deal with the problem of tuberculosis and all persons who have the responsibility of maintaining and caring for the health of young adolescent women.

La Ponction Sternale: Procédé de diagnostic cytologique. P. Émile-Weil and Suzanne Perlès. 183 pp. Paris: Masson et Cie, 1938. 75 Fr. fr.

This short monograph on sternal puncture contains up-to-date information in regard to this procedure. There is a section describing the normal myelogram, and one portraying the pathologic myelogram. In the latter there are chapters on the leukemias, leukemoid reactions, tumors of the marrow (chloromas, myelomas, reticuloendotheliomas), metastatic tumors, the anemias, polycythemia, erythroblastosis, eosinophilia, infectious diseases, hepatomegalies, splenomegalies and adenopathies. The work contains numerous illustrations, the majority black and white drawings, and a number of colored reproductions. The latter are particularly well done. There is a long bibliography referring to papers in the French, German, Italian and American literature. There is some suspicion, however, that not all the references were actually read since there are occasional ludicrous errors in the names of the journals. On the whole, however, the work will be of value to those interested in hematology.

The Principles and Practice of Obstetrics. Joseph B. De Lee. Seventh edition. 1211 pp. Philadelphia and London: W. B. Saunders Co., 1938. $12.00.

This seventh edition of Dr. De Lee's textbook of obstetrics is as thoroughly excellent as its predecessors. It has been completely revised and now contains 1277 illustrations, 271 of them in color. The chapters dealing with the practical application of obstetrics rightly emphasize conservatism; they have been little changed. Because nearly two thirds of the births in the United States occur in private homes, the technic of home delivery, covering all complications, is emphasized. The chapters on the physiology of menstruation and nidation of the ovum and the blood chemistry of toxemia of pregnancy have been practically rewritten; that on obstetric analgesia and anesthesia has been brought up to date, as well as those dealing with the medical complications of obstetrics. Much space has been devoted to the mechanism of labor, and the length of the chapters on contracted pelvis illustrates the importance of this condition in Dr. De Lee's mind. He bemoans the frequent use of cesarean section for this condition and states that a better understanding of the pelvis and of the mechanism of labor in contracted pelves would oftentimes make the operation unnecessary. The chronological appendix is still a valuable contribution. The volume now extends to 1170 pages, with a complete cross-reference index of 30 pages.